

**THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION**

FUNDAMENTAL INNOVATION
SYSTEMS INTERNATIONAL LLC,

v.

SAMSUNG ELECTRONICS CO., LTD.,
et al.

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Case No. 2:17-cv-145-JRG-RSP

CLAIM CONSTRUCTION
MEMORANDUM AND ORDER

On January 23, 2018, the Court held a hearing to determine the proper construction of disputed claim terms in United States Patents No. 6,936,936, 7,239,111, 7,701,173, 7,791,319, 7,834,586, 7,893,655, 7,999,514, 8,232,766, 8,541,983, and 8,624,550. Having reviewed the arguments made by the parties at the hearing and in their claim construction briefing (Dkt. Nos. 102, 106 & 114),¹ having considered the intrinsic evidence, and having made subsidiary factual findings about the extrinsic evidence, the Court hereby issues this Claim Construction Memorandum and Order. *See Phillips v. AWH Corp.*, 415 F.3d 1303, 1314 (Fed. Cir. 2005); *Teva Pharm. USA, Inc. v. Sandoz, Inc.*, 135 S. Ct. 831, 841 (2015).

Also before the Court is Plaintiff's Motion to Exclude Defendants' Claim Construction Experts (Dkt. No. 83). As set forth herein, Plaintiff's motion is **DENIED**. Additionally, Plaintiff's Motion to Expedite the Motion to Exclude Defendants' Claim Construction Experts (Dkt. No. 85) is **DENIED AS MOOT**.

¹ Citations to documents (such as the parties' briefs and exhibits) in this Claim Construction Memorandum and Order refer to the page numbers of the original documents rather than the page numbers assigned by the Court's electronic docket unless otherwise indicated.

Table of Contents

I. BACKGROUND.....	4
II. LEGAL PRINCIPLES	6
III. PLAINTIFF’S MOTION TO EXCLUDE	9
IV. THE PARTIES’ STIPULATED TERMS	10
V. CONSTRUCTION OF DISPUTED TERMS IN THE ’936 PATENT FAMILY	10
A. “USB” and “USB connector”	11
B. “Universal Serial Bus (‘USB’) adapter” and “USB adapter”	22
C. “USB port,” “Universal Serial Bus (‘USB’) interface,” “USB controller,” “USB communication path,” and “USB cable”	27
D. “abnormal USB data condition [detected at said USB communication path]” and “abnormal data condition on said USB communication path”	32
E. “power limits imposed by the USB specification,” “USB specification,” and “a USB specification”	34
F. “configured to supply current on the VBUS line without regard to at least one USB Specification imposed limit,” “configured to supply current on the VBUS line without regard to at least one associated condition specified in a USB specification,” “[a charging subsystem enabled to draw current/power] unrestricted by at least one predetermined USB Specification limit,” and “[drawing current in excess of] at least one USB Specification defined limit”	36
G. “identification signal”	39
H. “A mobile device”	41
I. “microprocessor”	45
J. “means for receiving energy from a power socket”	47
K. “means for generating an identification signal that indicates to the mobile device that the power socket is not a USB hub or host”	48
L. “means for coupling the power output and identification signal to the mobile device”	51
VI. CONSTRUCTION OF DISPUTED TERMS IN THE ’319 PATENT FAMILY	53
M. “battery charge controller”	53
N. “voltage drop across [a/the] battery charge controller” and “voltage drop across a controller”	56
O. “power”	59
P. “a remainder of [the] power available from the battery charge controller” and “a remainder of the received power”	61
Q. “reference voltage” and “reference voltage signal”	65
R. “a [semiconductor] switch”	68

S. “the voltage sensing circuit” and “[the controller] is configured to control the switch in response to the voltage drop to provide sufficient power for operation of the device”	71
T. “wherein the supply current passes through the external driving semiconductor rather than through the battery charge controller,” “whereby load current passes through the external driving semiconductor instead of the battery charge controller,” and “whereby load current passes through the external driving semiconductor in lieu of the controller”	75
U. “USB,” “USB power,” “USB power supply,” and “non-USB source”	78
V. “means for receiving power from the USB port”	81
W. “means for supplying the received power to the rechargeable battery and to the portable device, wherein the supplied power is limited such that the rechargeable battery and the portable device may not draw more than a pre-determined maximum amount of current available from the USB port”	83
X. “means for both isolating the rechargeable battery from the portable device and controlling an amount of current supplied to the rechargeable battery such that the portable device receives a pre-determined amount of the received power needed to operate and the rechargeable battery receives a remainder of the received power”	86
Y. “means for measuring a voltage drop across a battery charge controller providing power to a portable device and an input of a switch in parallel”	90
Z. “means for responding to the voltage drop across the battery charge controller by modulating the switch to control a quantity of current supplied to a rechargeable battery such that the portable device receives a predetermined amount of power to operate and the rechargeable battery receives a remainder of power available from the battery charge controller”	93
VII. CONSTRUCTION OF DISPUTED TERMS IN THE ’173 PATENT FAMILY	95
AA. “USB”	95
BB. “A USB-compliant charging and power supply circuit comprising”	96
CC. “power”	99
DD. “reference voltage”	100
EE. “a [semiconductor] switch”	101
FF. “switch means for shutting off said semiconductor switch if charging is disabled”	103
VIII. CONCLUSION	104

I. BACKGROUND

Plaintiff Fundamental Innovation Systems International LLC (“Plaintiff” or “Fundamental” or “FISI”) has alleged infringement of United States Patents No. 6,936,936 (“the ’936 Patent”), 7,239,111 (“the ’111 Patent”), 7,701,173 (“the ’173 Patent”), 7,791,319 (“the ’319 Patent”), 7,834,586 (“the ’586 Patent”), 7,893,655 (“the ’655 Patent”), 7,999,514 (“the ’514 Patent”), 8,232,766 (“the ’766 Patent”), 8,541,983 (“the ’983 Patent”), 8,624,550 (“the ’550 Patent”) (collectively, the “patents-in-suit”) by Defendants Samsung Electronics Co., Ltd. and Samsung Electronics America, Inc. Plaintiff submits that the patents-in-suit relate to “battery charging and power management.” Dkt. No. 102 at 1.

The ’936 Patent, titled “Multifunctional Charger System and Method,” issued on August 30, 2005, and bears an earliest priority date of March 1, 2001. The ’111 Patent, ’586 Patent, ’766 Patent, and ’550 Patent are continuations of the ’936 Patent. The Abstract of the ’936 Patent states:

An adapter for providing a source of power to a mobile device through an industry standard port is provided. In accordance with one aspect of the invention, the adapter comprises a plug unit, a power converter, a primary connector, and an identification subsystem. The plug unit is operative to coupled [sic] the adapter to a power socket and operative to receive energy from the power socket. The power converter is electrically coupled to the plug unit and is operable to regulate the received energy from the power socket and to output a power requirement to the mobile device. The primary connector is electrically coupled to the power converter and is operative to couple to the mobile device and to deliver the outputted power requirement to the mobile device. The identification subsystem is electrically coupled to the primary connector and is operative to provide an identification signal.

The ’319 Patent, titled “Circuit and Method of Operation for an Electrical Power Supply,” issued on September 7, 2010, and bears a filing date of February 21, 2003. The ’514 Patent and the ’983 Patent are continuations of the ’319 Patent. The Abstract of the ’319 Patent states:

A battery charging circuit comprising: a semiconductor switch having an output connected to a rechargeable battery; a battery charge controller for receiving power from an external source, and supplying output power to a portable device and the input of the semiconductor switch, the current output of the battery charge controller being controllable; and a voltage sensing circuit for: measuring the voltage drop across the battery charge controller; and responding to the voltage drop across the battery charge controller by modulating the semiconductor switch to reduce the quantity of current supplied to the rechargeable battery when the voltage drop is too great; whereby the total power dissipated by the battery charge controller is controlled, the portable device receiving the power it needs to operate and the rechargeable battery receiving any additional available power.

The '173 Patent, titled "Charging and Power Supply for Mobile Devices," issued on April 20, 2010, and bears a filing date of December 13, 2005. The '655 Patent is a continuation of the '173 Patent. The Abstract of the '173 Patent states:

Charging and power supply for mobile devices is disclosed. A USB-compliant charging and power supply circuit includes switch-mode battery charging circuitry for receiving power from an external power source and for supplying output power through an output node to an electronic system of an electronic communication device and a battery. Battery isolation circuitry includes a semiconductor switch connecting the output node to the battery. The battery isolation circuitry senses voltage at the output node and variably restricts current to the battery when the voltage is below a minimum voltage value by operationally controlling the semiconductor switch as current passes through it. During variable current restriction the electronic system is supplied required power with said battery being supplied any additional available power.

Plaintiff, in its briefing, has organized these patents-in-suit into "the '936 Patent Family," "the '319 Patent Family," and "the '173 Patent Family." Defendants have referred to the '936 Patent Family as the "Fischer Patents." Defendants have referred to the '319 Patent Family as the "Veselic 2003" patents and have referred to the '173 Patent Family as the "Veselic 2005" patents. Collectively, Defendants have referred to the Veselic 2003 patents and the Veselic 2005 patents as the "Veselic Patents."

Shortly before the start of the January 23, 2018 hearing, the Court provided the parties with preliminary constructions with the aim of focusing the parties' arguments and facilitating

discussion. Those preliminary constructions are set forth below within the discussion for each term.

II. LEGAL PRINCIPLES

“It is a ‘bedrock principle’ of patent law that ‘the claims of a patent define the invention to which the patentee is entitled the right to exclude.’” *Phillips*, 415 F.3d at 1312 (quoting *Innova/Pure Water Inc. v. Safari Water Filtration Sys., Inc.*, 381 F.3d 1111, 1115 (Fed. Cir. 2004)). Claim construction is clearly an issue of law for the court to decide. *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 970–71 (Fed. Cir. 1995) (en banc), *aff’d*, 517 U.S. 370 (1996). “In some cases, however, the district court will need to look beyond the patent’s intrinsic evidence and to consult extrinsic evidence in order to understand, for example, the background science or the meaning of a term in the relevant art during the relevant time period.” *Teva*, 135 S. Ct. at 841 (citation omitted). “In cases where those subsidiary facts are in dispute, courts will need to make subsidiary factual findings about that extrinsic evidence. These are the ‘evidentiary underpinnings’ of claim construction that we discussed in *Markman*, and this subsidiary factfinding must be reviewed for clear error on appeal.” *Id.* (citing 517 U.S. 370).

To determine the meaning of the claims, courts start by considering the intrinsic evidence. *See Phillips*, 415 F.3d at 1313; *see also C.R. Bard, Inc. v. U.S. Surgical Corp.*, 388 F.3d 858, 861 (Fed. Cir. 2004); *Bell Atl. Network Servs., Inc. v. Covad Commc’ns Group, Inc.*, 262 F.3d 1258, 1267 (Fed. Cir. 2001). The intrinsic evidence includes the claims themselves, the specification, and the prosecution history. *See Phillips*, 415 F.3d at 1314; *C.R. Bard*, 388 F.3d at 861. Courts give claim terms their ordinary and accustomed meaning as understood by one of ordinary skill in the art at the time of the invention in the context of the entire patent. *Phillips*,

415 F.3d at 1312–13; *accord Alloc, Inc. v. Int’l Trade Comm’n*, 342 F.3d 1361, 1368 (Fed. Cir. 2003).

The claims themselves provide substantial guidance in determining the meaning of particular claim terms. *Phillips*, 415 F.3d at 1314. First, a term’s context in the asserted claim can be very instructive. *Id.* Other asserted or unasserted claims can aid in determining the claim’s meaning because claim terms are typically used consistently throughout the patent. *Id.* Differences among the claim terms can also assist in understanding a term’s meaning. *Id.* For example, when a dependent claim adds a limitation to an independent claim, it is presumed that the independent claim does not include the limitation. *Id.* at 1314–15.

“[C]laims ‘must be read in view of the specification, of which they are a part.’” *Id.* at 1315 (quoting *Markman*, 52 F.3d at 979 (en banc)). “[T]he specification ‘is always highly relevant to the claim construction analysis. Usually, it is dispositive; it is the single best guide to the meaning of a disputed term.’” *Phillips*, 415 F.3d at 1315 (quoting *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996)); *accord Teleflex, Inc. v. Ficos N. Am. Corp.*, 299 F.3d 1313, 1325 (Fed. Cir. 2002). This is true because a patentee may define his own terms, give a claim term a different meaning than the term would otherwise possess, or disclaim or disavow the claim scope. *Phillips*, 415 F.3d at 1316. In these situations, the inventor’s lexicography governs. *Id.* The specification may also resolve the meaning of ambiguous claim terms “where the ordinary and accustomed meaning of the words used in the claims lack sufficient clarity to permit the scope of the claim to be ascertained from the words alone.” *Teleflex*, 299 F.3d at 1325. But, “[a]lthough the specification may aid the court in interpreting the meaning of disputed claim language, particular embodiments and examples appearing in the specification will not generally be read into the claims.” *Comark Commc’ns, Inc. v. Harris*

Corp., 156 F.3d 1182, 1187 (Fed. Cir. 1998) (quoting *Constant v. Advanced Micro-Devices, Inc.*, 848 F.2d 1560, 1571 (Fed. Cir. 1988)); accord *Phillips*, 415 F.3d at 1323.

The prosecution history is another tool to supply the proper context for claim construction because a patent applicant may also define a term in prosecuting the patent. *Home Diagnostics, Inc., v. Lifescan, Inc.*, 381 F.3d 1352, 1356 (Fed. Cir. 2004) (“As in the case of the specification, a patent applicant may define a term in prosecuting a patent.”). “[T]he prosecution history (or file wrapper) limits the interpretation of claims so as to exclude any interpretation that may have been disclaimed or disavowed during prosecution in order to obtain claim allowance.” *Standard Oil Co. v. Am. Cyanamid Co.*, 774 F.2d 448, 452 (Fed. Cir. 1985).

Although extrinsic evidence can be useful, it is “less significant than the intrinsic record in determining the legally operative meaning of claim language.” *Phillips*, 415 F.3d at 1317 (citations and internal quotation marks omitted). Technical dictionaries and treatises may help a court understand the underlying technology and the manner in which one skilled in the art might use claim terms, but technical dictionaries and treatises may provide definitions that are too broad or may not be indicative of how the term is used in the patent. *Id.* at 1318. Similarly, expert testimony may aid a court in understanding the underlying technology and determining the particular meaning of a term in the pertinent field, but an expert’s conclusory, unsupported assertions as to a term’s definition are entirely unhelpful to a court. *Id.* Generally, extrinsic evidence is “less reliable than the patent and its prosecution history in determining how to read claim terms.” *Id.*

The Supreme Court of the United States has “read [35 U.S.C.] § 112, ¶ 2 to require that a patent’s claims, viewed in light of the specification and prosecution history, inform those skilled in the art about the scope of the invention with reasonable certainty.” *Nautilus, Inc. v. Biosig*

Instruments, Inc., 134 S. Ct. 2120, 2129 (2014). “A determination of claim indefiniteness is a legal conclusion that is drawn from the court’s performance of its duty as the construer of patent claims.” *Datamize, LLC v. Plumtree Software, Inc.*, 417 F.3d 1342, 1347 (Fed. Cir. 2005) (citations and internal quotation marks omitted), *abrogated on other grounds by Nautilus*, 134 S. Ct. 2120.

III. PLAINTIFF’S MOTION TO EXCLUDE

Plaintiff has moved to exclude the opinions of Defendants’ claim construction experts from these claim construction proceedings. Dkt. No. 83. Plaintiff argues that, in the parties’ October 30, 2017 Joint 4-3 Claim Construction and Prehearing Statement (Dkt. No. 81), Defendants failed to provide any “meaningful disclosure of their proposed testimony” as Plaintiff urges is required by the Court’s Local Patent Rule 4-3.

Defendants have responded that they identified their experts by name and specifically identified which expert would be offering opinions as to each disputed term. Dkt. No. 89 at 4. Defendants also submit that on November 13, 2017, Defendants provided Plaintiff with 80 pages of supplemental disclosure in the form of written summaries of the opinions of Defendants’ experts. *See* Dkt. No. 89, Exs. C & D.

Patent Local Rule 4-3(b) states in relevant part:

Not later than 60 days after service of the “Invalidity Contentions,” the parties shall complete and file a Joint Claim Construction and Prehearing Statement, which shall contain the following information: . . . an identification of any extrinsic evidence known to the party on which it intends to rely either to support its proposed construction of the claim or to oppose any other party’s proposed construction of the claim, including, but not limited to, as permitted by law, dictionary definitions, citations to learned treatises and prior art, and testimony of percipient and expert witnesses.

Defendants provided lengthy written summaries two weeks after the P.R 4-3 deadline (*see* Dkt. No. 80) but one week before Plaintiff deposed Defendants’ claim construction experts

on November 20–21, 2017, which in turn was prior to the filing of Plaintiff’s Opening Claim Construction Brief on December 5, 2017.

In the circumstances of the present case, the Court need not parse the adequacy of Defendants’ portions of the P.R. 4-3 statement because Plaintiff has not demonstrated any significant unfair prejudice.

Plaintiff’s Motion to Exclude Defendants’ Claim Construction Experts (Dkt. No. 83) is therefore **DENIED**. Addition, the motion to expedite (Dkt. No. 85) is **DENIED AS MOOT**.

IV. THE PARTIES’ STIPULATED TERMS

In their January 5, 2018 Joint Claim Construction Chart Pursuant to Patent Rule 4-5(d) (Dkt. No. 121 at A1-7), the parties have submitted the following agreed-upon construction:²

<u>Term</u>	<u>Construction</u>
“means for regulating the received energy from the power socket to generate a power”	Function: “regulating the received energy from the power socket to generate a power” Corresponding Structure: “power converter 104/304 including at least one of a switching converter, a transformer, a DC source, a voltage regulator, a linear regulator, or rectify [<i>sic</i> , rectifier]; and the equivalents thereof”

V. CONSTRUCTION OF DISPUTED TERMS IN THE ’936 PATENT FAMILY

Defendants have focused their briefing on the term “USB.” *See* Dkt. No. 106 at 2–6. Plaintiff’s opening brief addresses terms that include “USB,” but Plaintiff has not separately presented “USB” as a distinct disputed term. Because Defendants’ arguments as to “USB” can

² A similar proposal appears in the parties’ October 30, 2017 Joint 4-3 Claim Construction and Prehearing Statement (Dkt. No. 81 at 2).

be addressed in the context of the term “USB connector,” upon which Plaintiff has focused in its briefing (*see* Dkt. No. 102 at 3–7), the Court herein addresses the term “USB” together with the term “USB connector.”

A. “USB” and “USB connector”

<p align="center">“USB” (’936 Patent, ’111 Patent, ’586 Patent, ’766 Patent, ’550 Patent, All Claims)</p>	
Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
<p>USB should only be construed as part of the term in which it appears;</p> <p>a Universal Serial Bus is a type of serial bus. A serial bus is a communication channel across which data, if transmitted, is transmitted one bit at a time.</p>	<p>“USB” is an abbreviation for “Universal Serial Bus,” which is a computer standard technology described in Universal Serial Bus Specification Revision 2.0 and the prior versions of this standard, at the time of the claimed invention.</p>
<p align="center">“USB connector” (’936 Patent, All Claims; ’111 Patent, Claims 1–17; ’586 Patent, Claims 9, 12)</p>	
Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
<p>“a component that includes pins for Vbus and Gnd power, and D+ and D- communications and that connects to a USB device, hub, host or adapter”</p>	<p>No construction necessary outside of “USB.”</p> <p>Alternative: “connector specified in USB [at the time of the claimed invention]”</p>

Dkt. No. 81, Ex. A1 at 90; *id.*, Ex. B at 1 & 6; Dkt. No. 102 at 3; Dkt. No. 121 at A1-1 & A1-6.

Shortly before the start of the January 23, 2018 hearing, the Court provided the parties with the following preliminary constructions: “USB” means “Universal Serial Bus as described in Universal Serial Bus Specification Revision 2.0 and related versions of this standard at the time of the claimed invention”; and “USB connector” has its “Plain meaning (in light of the Court’s construction of ‘USB,’ above).

(1) The Parties' Positions

Plaintiff argues that the significance of “USB” is clear from the patents-in-suit, in which “the specification makes clear that the distinguishing features are always the same: the presence of the functions represented by the D+, D-, Vbus and Gnd pins that allow for coupling between USB connectors and carrying power and identification signals to practice the inventions.” Dkt. No. 102 at 4. Plaintiff also notes that the USB specification has allowed for “application specific” connectors, and Plaintiff further argues that Defendants’ proposed construction “is no construction at all because it does not even define which portion(s) of the thousands of pages of the specifications are at issue.” *Id.* at 6.

Defendants argue that the claims and the specification contain “no suggestion that the patentee acted as its own lexicographer or tried to redefine the term.” Dkt. No. 106 at 2. Defendants therefore urge that “‘USB’ must be limited to USB at the time of the claimed invention, and cannot encompass after-arising USB standards.” *Id.* at 4. Defendants likewise conclude that “‘USB connector’ simply refers to the connectors specified in USB at the time.” *Id.* Alternatively, Defendants argue that “[i]f ‘USB’ has no temporal limitation, the claims are indefinite.” *Id.* at 6. Defendants reiterate that “[t]he claims use the term ‘USB connector’ in its ordinary sense with no special meaning suggested,” and “[t]he specification likewise describes ‘USB connector’ in its ordinary sense to encompass physical and electrical connectivity.” *Id.* at 8.

Plaintiff replies that “[t]he structural elements recited in the ’936 patent family—USB connector, USB adapter, USB controller, USB interface, USB port and USB cable—are all expressly described in the patent disclosure.” Dkt. No. 114 at 1. Plaintiff also notes that “[t]he

acronym USB never appears on its own in any claim of the patents, it is always part of a term, which gives it context and meaning.” *Id.* at 3.

At the January 23, 2018 hearing, the parties presented oral argument regarding these disputed terms.

(2) Analysis

Claim 1 of the '936 Patent, for example, recites (emphasis added):

1. A *Universal Serial Bus* (“*USB*”) adapter for providing a source of power to a mobile device through a *USB* port, comprising:

a plug unit for coupling to a power socket and for receiving energy from the power socket;

a power converter electrically coupled to the plug unit, the power converter being operable to regulate the received energy from the power socket and to output a power requirement to the mobile device;

a primary *USB connector* electrically coupled to the power converter for connecting to the mobile device and for delivering the power requirement to the mobile device; and

an identification subsystem electrically coupled to the primary *USB connector* for providing an identification signal at one or more data lines of the primary *USB connector*;

wherein the identification signal comprises a voltage level that is applied to at least one of the data lines in the primary *USB connector*, and the identification signal comprises a logic high signal on the D+ data line and a logic high signal on the D- data line.

The specification discloses, for example:

Coupled to the USB port 18 is a USB connector 54. The USB connector 54 is the physical component that couples the USB port to the outside world. In the exemplary mobile device 10, the USB connector 54 is used to transmit and receive data from an external data/power source 56, receive power from the external data/power source 56, direct the transmitted/received data from/to the USB port 18, and direct the received power to the power subsystem 20.

* * *

In the embodiment shown in FIG. 2, the primary USB connector 102 is configured to mate with the USB connector 54 of the mobile device 10. The USB adapter 100 is operable to provide power to the mobile device 10 through the Vbus and Gnd power pins in the USB connectors 54 and 102. The USB adapter

100 also optionally provides a communication path for data across the D+ and D- data pins in the USB connectors 54 and 102.

'936 Patent at 6:7–14 & 6:62–7:2.

As a threshold matter, the parties agree that the term “USB” refers to a well-known group of industry standards, as reflected by Plaintiff’s discussion of “the USB specification” and “USB revision[s]” as well as Plaintiff’s citation of documents related to Universal Serial Bus Specification Revision 2.0. *See* Dkt. No. 102 at 1–3 & 5; *see also id.* at Ex. 18; '936 Patent at 1:37–40 (“many mobile devices presently use USB (Universal Serial Bus) interfaces”); Dkt. No. 102, Ex. 11, U.S. Provisional Application No. 60/273,021 at 7 (FISI-145-00055110) (“The traditional communications mode of operation of a USB peripheral is described in great detail in the current USB standard and is not discussed presently as it is obvious to a person skilled in the art.”). Extrinsic dictionary definitions also confirm this understanding. *See* Dkt. No. 106, Exs. 7–11.

Plaintiff proposes construing “USB connector” as merely requiring Vbus, Gnd, D+, and D- connections. Yet, adopting Plaintiff’s proposal would tend to confuse rather than clarify the scope of the claims because the dispute is whether “USB,” as used in the patents-in-suit, is limited to USB 2.0 or instead encompasses later-arising USB specifications. Plaintiff itself states that “all USB connectors have always retained the same functions represented by four basic pins: D+ and D-; Vbus and Gnd.” Dkt. No. 102 at 2; *see id.* at 4.

At first blush, a similar dispute appears to have been addressed in a case in the Northern District of California involving (unrelated) patents reasonably contemporaneous with the patents here in suit. *See DisplayLink Corp. v. Magic Control Tech. Corp.*, 615 F. Supp. 2d 1051 (N.D. Cal. 2009) (Whyte, J.). There, however, as to whether the upcoming “USB 3.0” standard would be covered by the term “USB,” the court stated: “Since it is impossible to know what that

standard specification will include, the question as to whether the patent will read on a serial bus using a future revision of the USB standard is *not ripe for decision*.” *Id.* at 1057 (emphasis added). The court thus did not conclusively resolve the issue, so to whatever extent *DisplayLink* might be considered as persuasive authority, there is no clear proposition that can be taken from *DisplayLink* for purposes of the present case.

A similar issue arose in the Western District of Wisconsin as to a patent with claims that recited “IEEE 802” networking standards. *Extreme Networks, Inc. v. Enterasys Networks, Inc.*, No. 07-C-229-C, 2007 WL 5601497, at *16–*17 (W.D. Wis. Nov. 21, 2007) (Crabb, J.). The court construed certain “IEEE 802” terms as referring to all such standards that existed at the time of the claimed invention, noting that “[a]n invention cannot comply with standards not yet in existence.” *Id.*, at *17. The court also stated:

Defendant argues that limiting the standards to a particular version could render the invention obsolete as the standards change. Defendant is correct, but that is not an argument for expanding the reach of a claim beyond what could have been anticipated by the inventor; it is an argument for not including as an element in a claim a set of standards that change over time. Defendant cites no authority to the contrary.

Id. *Extreme Networks*, although not binding on this Court, is nonetheless of some persuasive value here in favor of Defendants’ position that the term “USB” refers to the USB specifications that existed at the time of the claimed invention.

In *Chrimar Systems, Inc. v. Alcatel-Lucent, Inc., et al.*, No. 6:15-CV-163, 2016 WL 1228767 (E.D. Tex. Mar. 28, 2016) (Love, J.), this Court construed “BASE-T” as referring to the 10BASE-T and 100BASE-T standards, not the 1000BASE-T standard that post-dated the claimed invention. *Id.* at *8–*9. In particular, the Court relied upon the *PC Connector* and *Kopykake* cases that Defendants have likewise cited in the present case. See *PC Connector Solutions LLC v. SmartDisk Corp.*, 406 F.3d 1359, 1363 (Fed. Cir. 2005) (“meaning must be

interpreted as of [the] effective filing date”); *Kopykake Enters., Inc. v. Lucks Co.*, 264 F.3d 1377, 1383 (Fed. Cir. 2001) (“[W]hen a claim term understood to have a narrow meaning when the application is filed later acquires a broader definition, the literal scope of the term is limited to what it was understood to mean at the time of filing.”) (citation omitted).

More specifically, *PC Connector* found that the terms “conventional computer input/output port” and “standard input/output port” referred to ports existing at the time of filing. 406 F.3d at 1361–64. Although Plaintiff has noted that *PC Connector* was interpreting the words “conventional” and “standard” as part of its analysis, *PC Connector* nonetheless remains noteworthy for the principle that “[a] claim cannot have different meanings at different times; its meaning must be interpreted as of its effective filing date.” *Id.* at 1363; see *Versata Software, Inc. v. Zoho Corp.*, 213 F. Supp. 3d 829, 838 (W.D. Tex. 2016) (Sparks, J.) (“A claim term cannot be a moving target that changes over time.”). *Kopykake* found that the term “screen printing” was limited to processes that were conventional at the time of the invention. 264 F.3d at 1382–83. Also of note, the Federal Circuit reiterated in *Schering Corp. v. Amgen Inc.* that the court “must determine what the term meant at the time the patentee filed the . . . application.” 222 F.3d 1347, 1353 (Fed. Cir. 2000).

In analyzing the dispute in the present case, the Court considers the foregoing authorities as well as the general principle set forth in *Markman* and *Phillips* that “the ordinary and customary meaning of a claim term is the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention, i.e., as of the effective filing date of the patent application.” *Phillips*, 415 F.3d at 1313; see *Markman*, 52 F.3d at 986 (“the focus is on the objective test of what one of ordinary skill in the art at the time of the invention would have understood the term to mean”).

Turning to the present case, the Summary section of the written description indicates that the patentee used the term “USB” to refer to a particular “industry standard”:

An adapter for providing a source of power to a mobile device through an *industry standard* port is provided.

’936 Patent at 1:66–67 (emphasis added). Likewise, the Detailed Description section of the written description again refers to an “industry standard”:

Turning now to the drawing figures, shown in FIG. 1 is a schematic diagram of an exemplary mobile communication device 10 which has an *industry standard* interface. * * *

The exemplary mobile device 10 comprises a microprocessor 12, a communication subsystem 14, input/output 45 (“I/O”) devices 16, *an industry standard interface 18 which in this example is a USB port*, and a power subsystem 20.

Id. at 3:29–31 & 3:44–47 (emphasis added); *see* Dkt. No. 106, Ex. 6, U.S. Provisional Application No. 60/273,021 at 3–4 (SAMSUNG_FISI00005135–36) (referring to “the power traditionally available on the USB”).

The written description also provides at least some indication that the patentee was referring to the “current” USB specification in existence at the time of the claimed invention:

[M]any mobile devices *presently* use USB (Universal Serial Bus) interfaces for communicating and use a separate power interface, such as a barrel connector, for receiving power.

* * *

Although the USB interface can be used as a power interface, the USB is typically not used for that purpose by mobile devices. In accordance with the USB specification, *typical* USB power source devices, such as hubs and hosts, require that a USB device participate in a host-initiated process called enumeration in order to be compliant with the *current USB specification* in drawing power from the USB interface.

* * *

Typically when a mobile device 10 receives power over the USB from a USB host, it is required to draw power *in accordance with the USB specification*. *The USB specification specifies* a process for transferring energy across the USB called enumeration and limits the electrical current that can flow across the USB.

'936 Patent at 1:37–40, 1:48–55 & 8:1–6 (emphasis added); *see id.* at 9:44–45 (“in accordance with the power limits imposed by the USB specification”).

Plaintiff urges that referring to USB 2.0 would “blindly incorporate by reference indeterminate sections of USB Specification Revision 2.0” that Defendants would be free to pick and choose at some later stage of this litigation. Plaintiff notes authority that “[t]o incorporate material by reference, the host document must identify with detailed particularity what specific material it incorporates and clearly indicate where that material is found in the various documents.” *Advanced Display Sys., Inc. v. Kent State Univ.*, 212 F.3d 1272, 1282 (Fed. Cir. 2000).³

Yet, the USB 2.0 standards are fixed in time, even if not all portions of the standards are relevant in the present case. *See Extreme Networks*, 2007 WL 5601497, at *16 (in analogizing to a statute, stating that “[i]t may be that certain parts of the statute are inapplicable . . . , but that would not mean that the employer could pick and choose which portions of the law to follow, only that not all parts of the statute would be relevant in a particular situation”); *see also* Dkt. No. 106, Ex. 12, Dec. 19, 2017 Garney Decl. at ¶ 40 (“a POSA would be expected to look to all relevant sections of the USB documents to understand the term”).⁴ Plaintiff has also noted that a

³ To whatever extent Defendants are arguing that the provisional patent application incorporated-by-reference the USB 2.0 specification, no persuasive showing has been made in this regard, either factually as to how such incorporation is purportedly present or legally as to any authority regarding incorporation-by-reference through a citation in a technical document included with a provisional patent application. *See* Dkt. No. 106, Ex. 6, U.S. Provisional Application No. 60/273,021 at SAMSUNG_FISI00005163.

⁴ Plaintiff has argued that, during a deposition, Defendants’ expert was unable to identify the relevant portions of the USB 2.0 specification, but the cited line of questioning does not appear

“mini-B” USB connector at the time of the claimed invention would not have fit into a full-size USB receptacle, but Plaintiff has not shown how the existence of incompatible connectors at the relevant time warrants interpreting the claims so as to necessarily cover all connectors for all time. Plaintiff’s similar argument as to non-standard, vendor-specific cables is likewise unavailing. *See* Dkt. No. 102, Ex. 13, Dec. 5, 2017 Fernald Decl. at ¶¶ 25–29; *see also* Dkt. No. 106, Ex. 12, Dec. 15, 2007 Garney Decl. at ¶¶ 41–48.

Plaintiff has also relied upon *SuperGuide Corp v. DirecTV Enterprises, Inc.*, for the proposition that there is no prohibition against claims being interpreted in a manner that encompasses “after-arising technologies.” 358 F.3d 870, 878 (Fed. Cir. 2004). *SuperGuide* is distinguishable. Here, unlike in *SuperGuide*, the claim terms at issue refer to a particular group of standards. *See id.* at 878–80 (construing “regularly received television signal”).

Plaintiff has further cited *Celltrace LLC v. AT&T Inc.*, in which this Court rejected a proposal to limit “GSM-compatible” to the GSM standards at the time of the patent filing. No. 6:09-CV-294, 2011 WL 738927, at *16 (E.D. Tex. Feb. 23, 2011) (Love, J.). *Celltrace* distinguished *Kopykake* as having referred to “conventional” technology, but in the present case the patentee referred to specific attributes of the USB standards that existed at the time of the claimed invention. *See* ’936 Patent at 1:48–55, 8:1–6 & 9:44–45 (quoted above). The *Intellectual Ventures* case cited by Plaintiff is similarly distinguishable and, moreover, *Intellectual Ventures* attributed significance to the parties’ use of the indefinite article, “an,” in their agreed-upon construction for the term “ATA device.” *Intellectual Ventures I LLC v.*

to have asked for identification of specific portions of the specification. *See* Dkt. No. 114 at 4 (citing *id.*, Ex. 1, Nov. 20, 2017 Garney dep. at 148:7–149:14 (“In the patent what’s the difference between a USB connector, a USB interface and a USB port?”) & 201:18–205:12 (“Is the device held in your right-hand, is that a USB adapter?”)).

Toshiba Corp., 221 F. Supp. 3d 534, 542 (D. Del. 2016) (Robinson, J.) (addressing dispute regarding “ATA devices,” which the parties agreed means “a data device that complies with an . . . ATA standard”).

Finally, Plaintiff has relied upon *Internet Machines LLC v. Alienware Corp.*, which addressed the term “PCI Express.” No. 6:10-CV-23, 2011 WL 13096501 (E.D. Tex. June 23, 2011) (Schneider, J.). Although the Court stated that “a device that complies with a later version of the PCI Express standard will necessarily comply with the earlier versions in existence when the application was filed,” the Court was addressing a dispute as to indefiniteness. *Id.*, at *2–*3. The Court found that the term “PCI Express” did not render the claims indefinite despite changes in the standard over time. The Court noted merely that “[t]he claims are not indefinite simply because the standard is subject to later revision.” *Id.*, at *3. *Internet Machines* is thus distinguishable.

In sum, the authorities cited by Plaintiff are unpersuasive. In light of the above-cited authorities of *Markman*, *Phillips*, *Schering*, *PC Connector*, *Kopykake*, *Chrimar*, and *Extreme Networks*, the term “USB” in the patents-in-suit should be limited to the Universal Serial Bus standards that existed at the time of the claimed invention. *See also Mass. Inst. of Tech. v. Abacus Software*, 462 F.3d 1344, 1353 (Fed. Cir. 2006) (finding that term “should be defined by what was known in the art at the time”).

As to the term “USB connector,” the written description uses this term to refer to a physical connector rather than merely a collection of electrical “pins” (as suggested by Plaintiff’s proposal of a component with “pins for Vbus and Gnd power, and D+ and D- communications”). *See* ’936 Patent at 6:7–9 (“The USB connector 54 is the physical component that couples the USB port to the outside world.”) & 6:62–64 (“the primary USB connector 102 is configured to

mate with the USB connector 54 of the mobile device 10”). This is consistent with how the term “connector” is used in the USB 2.0 specification. *See* Dkt. No. 106, Ex. 14, Universal Serial Bus Specification Revision 2.0 at 85; *see also id.*, Ex. 15, USB 2.0 Specification Engineering Change Notice (ECN) #1: Mini-B Connector at 86.

Plaintiff has urged that because the USB 2.0 specification allows for “vendor-specific connect means,” the term “connector” encompasses such “vendor-specific” arrangements. Plaintiff has not shown, however, that the discussion of “vendor-specific connect means” and “captive cable assemblies” warrants broadening the meaning of “connector.” *See* Dkt. No. 102, Ex 17, Universal Serial Bus Specification Revision 2.0 at 88 & 90. Plaintiff’s expert’s extrinsic examples of vendors referring to their application-specific cables as being “USB cables” or as having “USB connectors” are of limited weight and are unpersuasive as to the present dispute. *See* Dkt. No. 102, Ex. 13, Dec. 5, 2017 Fernald Decl. at ¶¶ 25–29.

Finally, Plaintiff has also submitted a “Universal Serial Bus Cable & Connector Class Specification” document that refers to “APPLICATION SPECIFIC USB CONNECTORS.” Dkt. No. 114, Ex. 6 at 38; *see id.* at 2 (“special purpose nonstandard USB connector or cable assembly”). This evidence, however, is insufficient to justify broadening the scope of “USB connector” to encompass any USB-related connectors for all time.

On balance, although Plaintiff has shown that the applicable USB standards at the time of the claimed invention allowed for “nonstandard” connectors, Plaintiff has not demonstrated that the term “USB connector” refers merely to any structure that includes electrical pins for Vbus, Gnd, D+, and D-. Instead, the scope of “USB connector” is controlled by the Court’s findings as to the scope of “USB,” as discussed above and as construed in the chart below. Thus, no construction of “USB connector” is necessary apart from the Court’s construction of “USB.”

The Court therefore hereby construes the disputed terms as set forth in the following chart:

<u>Term</u>	<u>Construction</u>
“USB”	“Universal Serial Bus as described in Universal Serial Bus Specification Revision 2.0 and related versions of this standard at the time of the claimed invention”
“USB connector”	Plain meaning (in light of the Court’s construction of “USB,” above)

B. “Universal Serial Bus (‘USB’) adapter” and “USB adapter”

Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
“power adapter with a USB connector; not limiting”	<p>“Universal Serial Bus (‘USB’) adapter” is limiting as part of preamble.</p> <p>No additional construction necessary outside of “USB.”</p> <p>Alternative: “adapter specified in USB [at the time of the claimed invention]”</p>

Dkt. No. 102 at 7; Dkt. No. 106 at 13; Dkt. No. 121 at A1-1. The parties submit that this term appears in all claims of the ’936 Patent and all claims of the ’111 Patent. *Id.*

Shortly before the start of the January 23, 2018 hearing, the Court provided the parties with the following preliminary construction: “‘USB adapter’ (in preambles)[:] Not limiting”; and “‘USB adapter’ (in body of claims)[:] ‘power supply configured to supply power from a power source to a USB device.’”

(1) The Parties' Positions

Plaintiff argues that this term, which appears only in the preambles, is not limiting because “the elements in the body of the ’936 and ’111 patents expressly recite a complete invention without any reference to “USB adapter.” Dkt. No. 102 at 7. Alternatively, Plaintiff argues that “the ’936 patent consistently describes ‘a USB adapter’ as one ‘for providing a source of power to a mobile device through a USB port.’” *Id.* (citing ’936 Patent at Claims 1, 13, 25, 84, 2:15–17 & 2:31–32).

Defendants respond that “USB adapter” is limiting because it recites essential structure. Dkt. No. 106 at 13. As to the proper construction, Defendants argue that “the patentee started with a standard USB adapter and then claimed *additions* to it outside the existing USB standard; it never acted as a lexicographer to redefine the term ‘USB adapter’ itself.” *Id.* at 14.

At the January 23, 2018 hearing, the parties presented oral argument regarding this disputed term.

(2) Analysis

In general, a preamble limits the invention if it recites essential structure or steps, or if it is “necessary to give life, meaning, and vitality” to the claim. *Pitney Bowes[, Inc. v. Hewlett-Packard Co.]*, 182 F.3d [1298,] 1305 [(Fed. Cir. 1999)]. Conversely, a preamble is not limiting “where a patentee defines a structurally complete invention in the claim body and uses the preamble only to state a purpose or intended use for the invention.” *Rowe v. Dror*, 112 F.3d 473, 478, 42 USPQ2d 1550, 1553 (Fed. Cir. 1997).

Catalina Mktg. Int’l, Inc. v. Coolsavings.com, Inc., 289 F.3d 801, 808 (Fed. Cir. 2002); *see, e.g., Eaton Corp. v. Rockwell Int’l Corp.*, 323 F.3d 1332, 1339 (Fed. Cir. 2003) (“When limitations in the body of the claim rely upon and derive antecedent basis from the preamble, then the preamble may act as a necessary component of the claimed invention.”). Also, “the purpose or intended use of the invention . . . is of no significance to claim construction . . .” *See Pitney*

Bowes, 182 F.3d at 1305. This principle has sometimes been characterized as “the presumption against reading a statement of purpose in the preamble as a claim limitation.” *Marrin v. Griffin*, 599 F.3d 1290, 1294–95 (Fed. Cir. 2010); *see Allen Eng’g Corp. v. Bartell Indus.*, 299 F.3d 1336, 1346 (Fed. Cir. 2002) (“Generally, the preamble does not limit the claims.”).

Claim 1 of the ’936 Patent, for example, recites (emphasis added):

1. A *Universal Serial Bus (“USB”) adapter* for providing a source of power to a *mobile device* through a USB port, comprising:
 - a plug unit for coupling to a power socket and for receiving energy from the power socket;
 - a power converter electrically coupled to the plug unit, the power converter being operable to regulate the received energy from the power socket and to output a power requirement to *the mobile device*;
 - a primary USB connector electrically coupled to the power converter for connecting to *the mobile device* and for delivering the power requirement to *the mobile device*; and
 - an identification subsystem electrically coupled to the primary USB connector for providing an identification signal at one or more data lines of the primary USB connector;wherein the identification signal comprises a voltage level that is applied to at least one of the data lines in the primary USB connector, and the identification signal comprises a logic high signal on the D+ data line and a logic high signal on the D- data line.

The term “[a] Universal Serial Bus (‘USB’) adapter” in the preamble is set forth in association with “a mobile device,” which in turn provides antecedent basis for “the mobile device” recited in the claim. In some circumstances, additional details provided in the preamble can be limiting where the preamble provides antecedent basis for a term used in the body of the claim. *See Proveris Scientific Corp. v. Innovasystems, Inc.*, 739 F.3d 1367, 1373 (Fed. Cir. 2014) (“The phrase ‘the image data’ clearly derives antecedent basis from the ‘image data’ that is *defined in greater detail in the preamble* as being ‘representative of at least one sequential set of images of a spray plume.’”) (emphasis added). This principle is applicable to Claim 17 of the

'111 Patent, in which the “USB connector” recited in the body of the claim has antecedent basis in the preamble with reference to the “USB adapter.”

As to Claim 1 of the '936 Patent, however, the preamble's recital of “providing a source of power to a mobile device” is merely descriptive of the limitations expressly recited in the body of the claim. In other words, the “framework of the invention” is set forth in the body of the claim rather than in the preamble. *See On Demand Machine Corp. v. Ingram Indus., Inc.*, 442 F.3d 1331, 1343 (Fed. Cir. 2006). The recital of an “adapter” (rather than a “USB adapter”) in the preamble of Claim 1 of the '550 Patent, cited by Defendants, does not compel otherwise. Also of note, the written description states: “Although the embodiments have been described with reference to the USB interface, it is contemplated that the invention could be applicable to devices and systems that use other standard interfaces such as the IEEE 1394 interface.” '936 Patent at 11:41–45.

The “USB adapter” term in the preamble is therefore not limiting. *See IMS Tech., Inc. v. Haas Automation, Inc.*, 206 F.3d 1422, 1434 (Fed. Cir. 2000) (“The phrase ‘control apparatus’ in the preamble merely gives a descriptive name to the set of limitations in the body of the claim that completely set forth the invention.”); *see also Deere & Co. v. Bush Hog, LLC*, 703 F.3d 1349, 1358 (Fed. Cir. 2012) (“if the body of the claim describes a structurally complete invention, a preamble is not limiting where it ‘merely gives a name’ to the invention, extols its features or benefits, or describes a use for the invention”) (quoting *Catalina*, 289 F.3d at 809). Many of the other claims here at issue are similar. *See* '936 Patent at Cls. 13, 25, 37, 59, 65, 74, 78 & 84; *see also* '111 Patent at Cls. 1 & 18.

In Claims 51, 55, 63, 70, 95, 99, 101, and 103 of the '936 Patent, by contrast, the term “USB adapter” appears in the body of the claim rather than in the preamble. The context in

which the term is used makes clear that a “USB adapter” is a power supply that provides power from a power source to a USB device, and the written description confirms this interpretation. *See, e.g.*, ’936 Patent at 2:15–24. Unlike “USB connector,” discussed above, construction is required in light of the disclosure that a “USB adapter” in the patents-in-suit is configured so as to enable “draw[ing] power *without regard* to the USB specification and the USB specification imposed limits.” *Id.* at 8:1–12 (emphasis added); *see id.* at 9:21–32 (“the mobile device 10 determines that the device connected to the USB connector 54 is not a typical USB host or hub and that a USB adapter 100 has been detected”); *see also id.* at 8:21–23 (“In one embodiment, the identification subsystem 108 comprises a hard-wired connection of a single voltage level to both data lines.”). The claims likewise provide context as to “identify[ing] the USB adapter as *not being limited* by the power limits imposed by the USB specification.” *Id.* at Cls. 63, 99, 101 & 103. The Court therefore rejects Defendants’ request, presented at the January 23, 2018 hearing, that the disputed term be construed as a “USB power supply . . .” rather than a “power supply”

The Court therefore hereby construes the disputed term as set forth in the following chart:

<u>Term</u>	<u>Construction</u>
“Universal Serial Bus (‘USB’) adapter” (’936 Patent, Claims 1, 13, 25, 37, 59, 65, 74, 78, 84; ’111 Patent, Claims 1, 18)	Not limiting
“USB adapter” (’936 Patent, Claims 51, 55, 63, 70, 95, 99, 101, 103; ’111 Patent, Claim 17)	“power supply configured to supply power from a power source to a USB device”

C. “USB port,” “Universal Serial Bus (‘USB’) interface,” “USB controller,” “USB communication path,” and “USB cable”

“USB port” (’936 Patent, Claims 1, 13, 25, 84, and dependent claims; ’111 Patent, All Claims)	
Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
“circuitry capable of communication according to a USB specification and capable of receiving power from an external power source”	“USB port” is limiting as part of preamble. No additional construction necessary outside of “USB.” Alternative: “port specified in USB [at the time of the claimed invention]”
“Universal Serial Bus (‘USB’) interface” (’586 Patent, Claims 8–13)	
Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
“an interface capable of communication according to a USB specification and capable of receiving power from an external power source”	No construction necessary outside of “USB.” Alternative: “interface specified in USB [at the time of the claimed invention]”
“USB controller” (’936 Patent, Claims 25, 55, 101, and dependent claims; ’111 Patent, Claim 8)	
Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
“an apparatus responsible for controlling communications across USB data lines or power delivery across USB power line”	No construction necessary outside of “USB.” Alternative: “controller specified in USB [at the time of the claimed invention]”

<p align="center">“USB communication path” ('766 Patent, All Claims; '550 Patent, All Claims)</p>	
Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
“path over which signals across USB data pins can be received or transmitted”	<p>“USB communication path” is limiting as part of preamble.</p> <p>No additional construction necessary outside of “USB.”</p> <p>Alternative: “communication path specified in USB [at the time of the claimed invention]”</p>
<p align="center">“USB cable” ('586 Patent, Claims 8–13)</p>	
Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
“cable including conductors for Vbus and Gnd power and D+ and D- communications”	<p>No construction necessary outside of “USB.”</p> <p>Alternative: “cable specified in USB [at the time of the claimed invention]”</p>

Dkt. No. 81, Ex. B at 4, 5, 7–8 & 9; Dkt. No. 102 at 9; Dkt. No. 121 at A1-2–A1-3.

Shortly before the start of the January 23, 2018 hearing, the Court provided the parties with the following preliminary construction: “Plain and ordinary meaning apart from construction of ‘USB’ above.”

(1) The Parties’ Positions

Plaintiff submits that whereas Defendants fail to provide their interpretation of these terms, Plaintiff’s proposals are consistent with disclosures in the specification. Dkt. No. 102 at 9–10.

Defendants respond, as to “USB cable”: “The Fischer specification does not mention ‘USB cable,’ thus a POSA would understand the term according to its well-known meaning in USB. The USB 2.0 standard defines mechanical and material requirements for USB cables in section 6.6.” Dkt. No. 106 at 10. Defendants likewise argue, as to “USB interface,” that “Plaintiff redefines ‘interface’ to remove physicality, contrary to the claim language and the specification.” *Id.* at 11. Defendants further argue that Plaintiff’s proposals “would improperly change claim scope whenever a new USB standard is released.” *Id.*

Plaintiff replies that “[Defendants] ignore[] that the alleged discussion of controllers and communication paths in Rev. 2.0 relied on by its expert are inconsistent with the express teaching in the patents.” Dkt. No. 114 at 5. As to “USB cable,” Plaintiff argues: “The patents describe using USB connectors to join together a device and an adapter – this is a USB cable. Ex. 102-2 [936] 6:9–14, 6:62–7:2. The term ‘cable’ need not be explicitly used. *Wi-LAN USA, Inc. v. Apple Inc.*, 830 F.3d 1374, 1382 (Fed. Cir. 2016).” Dkt. No. 114 at 5.

At the January 23, 2018 hearing, the parties presented oral argument regarding these disputed terms.

(2) Analysis

As to “USB port,” Claim 1 of the ’936 Patent, for example, recites “providing a source of power to a mobile device through a USB port.” The written description discloses:

The USB port 18 provides the mobile device 10 with a serial port for linking directly with other computers to exchange data and/or to receive power. The USB port 18 also provides the mobile device 10 with a means for receiving power from an external power source.

’936 Patent at 5:56–60; *see id.* at 3:54–57 (similar). Also of note, the written description refers to “USB port 18” as an example of an “industry standard interface.” *Id.* at 3:46–47 (“an industry standard interface 18 which in this example is a USB port”). The written description thus refers

to “USB port” in terms of a standard. Further, Plaintiff has not shown any indication in the claims or the written description that “USB” in this context conveys any meaning other than referring to the USB standards in existence at the time of the claimed invention. *See, e.g., PC Connector*, 406 F.3d at 1363 (discussed above as to the term “USB”).

Substantially the same analysis applies to “Universal Serial Bus (‘USB’) interface” and “USB cable.” Plaintiff has cited disclosure in a provisional patent application that “a USB interface 100 comprising a Vbus power line 100, D+ data line 120, D- data line 130 and GND power line 140 is connected to a charging circuit 400 via the Vbus 110 and GND 140 power lines.” Dkt. No. 102, Ex. 11, U.S. Provisional Application No. 60/273,021 at 5–6 (FISI-145-00055108–09). This does not rise to the level of a lexicography and does not appear to be inconsistent with the above-cited disclosure in the written description referring to an “industry standard interface.” *See* ’936 Patent at 3:46–47.

As to “USB communication path,” Plaintiff has noted that whereas claims of the ’550 Patent recite an “adapter” that comprises “a USB communication path,” Defendants’ expert has testified that “communication paths” in the USB 2.0 specification are between a host and a device, and “[w]ithin the USB revision 2, April 2000 document, a host would not be considered an adapter.” Dkt. No. 128, Ex. 25, Nov. 20, 2017 Garney dep. at 248:16–21 & 249:11–14. Plaintiff has not, however, stated that it agrees with the opinions of Defendants’ expert as to the use of “communication path” in the USB standards. Instead, any question as to whether an instrumentality accused of being a claimed “adapter” has a “USB communication path” is a question of fact for the finder of fact to evaluate in light of the relevant USB standards. *See Acumed LLC v. Stryker Corp.*, 483 F.3d 800, 806 (Fed. Cir. 2007) (“The resolution of some line-drawing problems . . . is properly left to the trier of fact.”) (citing *PPG Indus. v. Guardian Indus.*

Corp., 156 F.3d 1351, 1355 (Fed. Cir. 1998) (“after the court has defined the claim with whatever specificity and precision is warranted by the language of the claim and the evidence bearing on the proper construction, the task of determining whether the construed claim reads on the accused product is for the finder of fact”)); *Eon Corp. IP Holdings v. Silver Spring Networks*, 815 F.3d 1314, 1318–19 (Fed. Cir. 2016) (citing *PPG*).

Similarly, as to “USB controller,” Plaintiff has cited disclosure of a USB controller that can enable a device to draw power “without waiting for enumeration” (’936 Patent at 9:2–4), and Defendant’s expert has testified as to being unable to “think of a controller at the moment that would not have some participation in bus enumeration.” Dkt. No. 128, Ex. 25, Nov. 20, 2017 Garney dep. at 253:12–19. As to what such a “controller” is, the written description discloses for example: “the identification subsystem 108 comprises a USB controller that is operable to communicate an identification signal to the mobile device 10.” ’936 Patent at 8:37–39. On balance, the written description is consistent with understanding the recited “USB controller” as a controller that accords with the USB standard but that is utilized in a purportedly inventive manner. Any question as to whether an instrumentality accused of being a claimed “adapter” has a “USB controller” is a question of fact for the finder of fact to evaluate in light of the relevant USB standards. *See Acumed*, 483 F.3d at 806 (citing *PPG*, 156 F.3d at 1355); *Eon*, 815 F.3d at 1318–19 (citing *PPG*).

The Court therefore hereby construes **“USB port,” “Universal Serial Bus (‘USB’) interface,” “USB controller,” “USB communication path,”** and **“USB cable”** to have their **plain meaning** apart from the Court’s construction of “USB.”

**D. “abnormal USB data condition [detected at said USB communication path]” and
“abnormal data condition on said USB communication path”**

“abnormal USB data condition [detected at said USB communication path]” (’766 Patent, Claims 1–16)	
Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
“condition [detected at the USB communication path] that is not defined as a valid (or legal) data condition by the USB specification”	“an invalid or illegal data condition specified in USB”
“abnormal data condition on said USB communication path” (’550 Patent, Claims 4, 13, and dependent claims)	
Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
<i>see</i> “abnormal USB data condition” & “USB communication path” above	“an invalid or illegal data condition on said USB communication path”

Dkt. No. 102 at 11; Dkt. No. 106 at 13; Dkt. No. 121 at A1-5–A1-6.

Shortly before the start of the January 23, 2018 hearing, the Court provided the parties with the following preliminary construction: “‘condition on the USB communication path that is not defined as a valid USB data condition’ (in light of the Court’s construction of ‘USB,’ above).”

(1) The Parties’ Positions

Plaintiff argues that “[t]he claims do not require the signal be defined as illegal or invalid by the USB specification Revision 2.0, only that it is a signal that a USB hub or host is not expected to send in accordance with the USB specification Revision 2.0, that is, one that the USB specification does not explicitly define as valid or legal.” Dkt. No. 102 at 12.

Defendants respond that Plaintiff's proposed construction "improperly converts the term into a negative limitation with uncertain scope and suspect written description." Dkt. No. 106 at 13.

(2) Analysis

Defendants have cited a portion of the USB 2.0 standard that refers to a particular condition: "Low-speed and fullspeed USB drivers must never 'intentionally' generate an SE1." Dkt. No. 106, Ex. 14 at 123.⁵ Defendants have not demonstrated, however, that an "abnormal" condition must necessarily be a condition that is set forth in a USB standard at the time of the claimed invention. Indeed, the written description is directed to enabling particular operations "*without regard* to the USB specification and the USB specification imposed limits." '936 Patent at 8:7–12; *see id.* at 9:5–15; *see also id.* at 9:25–29. Defendants' proposal is thus at odds with the written description.

The Court therefore hereby construes "**abnormal USB data condition [detected at said USB communication path]**" and "**abnormal data condition on said USB communication path**" to mean "**condition on the USB communication path that is not defined as a valid USB data condition**" (in light of the Court's construction of "USB," above).

⁵ "SE1 is a state in which both the D+ and D- lines are at a voltage above V_{OSE1} (min), which is 0.8 V." *Id.*

E. “power limits imposed by the USB specification,” “USB specification,” and “a USB specification”

<p align="center">“power limits imposed by the USB specification” (’936 Patent, Claims 51, 55, 63, 70, 99, 101 and dependent claims)</p>	
Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
“one or more limits related to power supply imposed by the USB 2.0 specification”	No construction necessary outside of “USB.” Alternative: “limits on a power supply imposed by the USB specification [at the time of the claimed invention]”
<p align="center">“USB specification” (’550 Patent, Claim 10 and dependent claims; ’766 Patent, Claims 1, 9, 17 and dependent claims)</p>	
Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
“the USB 2.0 specification”	“USB specification [at the time of the claimed invention]”
<p align="center">“a USB specification” (’550 Patent, Claim 1 and dependent claims)</p>	
Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
“a Universal Serial Bus specification”	“USB specification [at the time of the claimed invention]”

Dkt. No. 102 at 12 (emphasis omitted); Dkt. No. 106 at 7; Dkt. No. 121 at A1-3–A1-4.

Shortly before the start of the January 23, 2018 hearing, the Court provided the parties with the following preliminary construction: “Plain meaning (in light of the Court’s construction of ‘USB,’ above).”

(1) The Parties' Positions

Plaintiff argues: “[T]he USB specification,’ with a definite article, and ‘USB Specification,’ with both words capitalized to signify a proper noun, both clearly refer to the USB specification in effect at the time of the invention. In contrast, ‘a USB specification’ with an indefinite article, is broader, as reflected by Fundamental’s construction.” Dkt. No. 102 at 12.

Defendants respond that “whether these terms are temporally limited should not turn on [Plaintiff’s] litigation strategy, nor on the arbitrary presence or absence of a capital letter.” Dkt. No. 106 at 7.

(2) Analysis

The parties’ dispute as to these “USB” terms is resolved by the Court’s construction of “USB,” above; no separate construction is necessary as to “USB specification,” “a USB specification,” or “the USB specification.”

The Court therefore hereby construes **“power limits imposed by the USB specification,” “USB specification,” and “a USB specification”** to have their **plain meaning** (in light of the Court’s construction of “USB,” above).

F. “configured to supply current on the VBUS line without regard to at least one USB Specification imposed limit,” “configured to supply current on the VBUS line without regard to at least one associated condition specified in a USB specification,” “[a charging subsystem enabled to draw current/power] unrestricted by at least one predetermined USB Specification limit,” and “[drawing current in excess of] at least one USB Specification defined limit”

<p align="center">“configured to supply current on the VBUS line without regard to at least one USB Specification imposed limit” (’550 Patent, Claim 10 and dependent claims)</p>	
Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
<p>“at least one USB Specification imposed limit”: “at least one Universal Serial Bus 2.0 Specification current supply limit”</p> <p>The remaining term requires no additional construction at this time (<i>i.e.</i>, plain and ordinary meaning in light of the intrinsic evidence).</p>	Indefinite
<p align="center">“configured to supply current on the VBUS line without regard to at least one associated condition specified in a USB specification” (’550 Patent, Claim 1 and dependent claims)</p>	
Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
<p>“at least one associated condition specified in a USB specification”: “at least one condition associated with supplying current in a Universal Serial Bus specification”</p> <p>The remaining term requires no additional construction at this time (<i>i.e.</i>, plain and ordinary meaning in light of the intrinsic evidence).</p>	Indefinite

<p align="center">“[a charging subsystem enabled to draw current/power] unrestricted by at least one predetermined USB Specification limit” (’766 Patent, Claims 1, 9, and dependent claims)</p>	
Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
<p>“at least one predetermined USB Specification limit”: “at least one limit related to current/power draw defined by the Universal Serial Bus 2.0 Specification that is determined beforehand”</p>	<p>“unrestricted by at least one predetermined USB Specification limit” is indefinite</p>
<p align="center">“[drawing current in excess of] at least one USB Specification defined limit” (’766 Patent, Claim 17 and dependent claims)</p>	
Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
<p>“at least one USB specification defined limit”: “at least one limit related to current draw defined by Universal Serial Bus 2.0 Specification”</p>	<p>“in excess of at least one USB Specification defined limit” is indefinite</p>

Dkt. No. 81, Ex. B at 16–19; Dkt. No. 102 at 12–13; Dkt. No. 121 at A1-4–A1-5.

Shortly before the start of the January 23, 2018 hearing, the Court provided the parties with the following preliminary construction: “Plain meaning (not indefinite).”

(1) The Parties’ Positions

Plaintiff argues that Defendants’ positions in *Inter Partes* Review proceedings are inconsistent with Defendants’ indefiniteness arguments in the present case. Dkt. No. 102 at 14.

Defendants argue that “these terms are defined by disregarding ‘at least one’ USB 2.0 current limit,” “[b]ut the USB 2.0 standard itself already requires that, so the terms make no sense.” Dkt. No. 106 at 12.

Plaintiff replies: “A POSA knows that they can easily determine whether they are delivering current or power in violation of a limit in any revision of the specification by simply

going to the USB IF web portal. Ex. 1 [Garney], 130:1-131:8. If so, there is infringement. This rote process is the opposite of indefiniteness.” Dkt. No. 114 at 6.

(2) Analysis

These limitations set forth in the USB 2.0 specification are specified for various different conditions. *See* Dkt. No. 102, Ex. 13, Dec. 5, 2017 Fernald Decl. at ¶ 78 (“a device would transition among different states and each state has certain associated limits”); *see also id.* at ¶¶ 62–63 & 76–77; Dkt. No. 106, Ex. 14, Universal Serial Bus Specification Revision 2.0 at Table 7-7 (SAMSUNG_FISI00119118–20). To whatever extent Defendants are arguing that the disputed terms are overbroad, “breadth is not indefiniteness.” *BASF Corp. v. Johnson Matthey Inc.*, 875 F.3d 1360, 1367 (Fed. Cir. 2017) (quoting *SmithKline Beecham Corp. v. Apotex Corp.*, 403 F.3d 1331, 1341 (Fed. Cir. 2005)).

The Court therefore hereby expressly rejects Defendants’ indefiniteness arguments.⁶ No further construction is necessary.

The Court accordingly hereby construes **“configured to supply current on the VBUS line without regard to at least one USB Specification imposed limit,” “configured to supply current on the VBUS line without regard to at least one associated condition specified in a USB specification,” “[a charging subsystem enabled to draw current/power] unrestricted by at least one predetermined USB Specification limit,” and “[drawing current in excess of] at least one USB Specification defined limit”** to have their **plain meaning**.

⁶ The Court need not reach Plaintiff’s arguments as to Defendants’ positions in *Inter Partes* Review proceedings. Even if reached, however, Plaintiff has not addressed the differences in the relevant legal standards applied in the present litigation as contrasted with *Inter Partes* Review proceedings.

G. “identification signal”

Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
“electrical signal that provides information regarding an adapter power type or a power source type”	“signal that informs the mobile device that the USB adapter is not limited by the power limits imposed by the USB specification”

Dkt. No. 102 at 14; Dkt. No. 106 at 15; Dkt. No. 121 at A1-6. The parties submit that this term appears in all claims of the ’936 Patent, all claims of the ’111 Patent, Claims 8–13 of the ’586 Patent, and Claims 17 and 19 of the ’766 Patent. *Id.*

Shortly before the start of the January 23, 2018 hearing, the Court provided the parties with the following preliminary construction: “signal that identifies a power source type.”

(1) The Parties’ Positions

Plaintiff argues that Defendants’ proposed construction “incorrectly focuses on a single intended use of the identification signal and renders other claim limitations redundant.” Dkt. No. 102 at 14.

Defendants respond: “FISI’s overly broad construction must be rejected because it would capture USB enumeration, which contradicts the essence of the ‘identification signal’: to enable power supply *without* USB enumeration. ’550, 2:1–15, 9:65–10:3; Ex 12 ¶ 136.” Dkt. No. 106 at 16.

At the January 23, 2018 hearing, the parties presented oral argument regarding this disputed term.

(2) Analysis

Claim 1 of the ’936 Patent, for example, recites (emphasis added): “wherein the *identification signal* comprises a voltage level that is applied to at least one of the data lines in

the primary USB connector, and the *identification signal* comprises a logic high signal on the D+ data line and a logic high signal on the D- data line.”

As another example, Claims 51, 55, and 70 of the ’936 Patent recite (emphasis added): “providing an identification signal to the mobile device, via the identification subsystem and the USB connector, that is operative to *inform the mobile device that the USB adapter is not limited by the power limits imposed by the USB specification.*”

Admittedly, redundancy in a construction is not prohibited. *See 01 Communique Lab., Inc. v. LogMeIn, Inc.*, 687 F.3d 1292, 1296 (Fed. Cir. 2012) (“we have not discovered[] any authority for the proposition that construction of a particular claim term may not incorporate claim language circumscribing the meaning of the term”).

Nonetheless, because the claims already recite detail regarding the nature of the “identification signal,” and because Defendants’ proposed construction would render above-quoted language in Claims 51, 55, and 70 of the ’936 Patent superfluous, Defendants’ proposed construction is disfavored.

Defendants have cited a construction of “identification signal” in *Suffolk Technologies LLC v. AOL Inc.*, wherein the court stated that “it is clear from the specification that the ‘identification signal’ conveys specific information.” 942 F. Supp. 2d 600, 609 (E.D. Va. 2013). *Suffolk* involved a patent that is not related to the patents here in suit, and the construction of the term “identification signal” in that unrelated patent is not persuasive here. *See e.Digital Corp. v. Futurewei Techs., Inc.*, 772 F.3d 723, 727 (Fed. Cir. 2014) (“a claim of an unrelated patent ‘sheds no light on’ the claims of the patent in suit) (citations omitted).

Further, Plaintiff has cited disclosure in the written description that is consistent with Plaintiff’s proposed interpretation. In particular, although the written description discloses, for

example, that “[t]he identification subsystem 108 provides an identification signal to the mobile device 10 that the power source is not a USB limited source,” the written description also discloses an embodiment in which signals from identification subsystem 108 “identify the attached device as a USB adapter.” ’936 Patent at 8:13–15 & 9:21–29; *see id.* at 3:5–9 & 9:50–55. The usage of “identification signal” thus appears to contemplate, not surprisingly, identification.

Finally, Defendants argue that Plaintiff’s proposal improperly encompasses the “enumeration” process that the written description refers to foregoing. *See, e.g.*, ’936 Patent at 1:55–63, 9:2–4 & 9:50–55. Defendants have not demonstrated, however, that Plaintiff’s proposed construction is coextensive with “enumeration.” Instead, the written description explains that enumeration is a process specified in the USB specification. *Id.* at 8:3–6.

For all of these reasons, the Court rejects Defendants’ proposal of explicitly “inform[ing] the mobile device that the USB adapter is not limited by the power limits imposed by the USB specification.”

The Court therefore hereby construes **“identification signal”** to mean **“signal that identifies a power source type.”**

H. “A mobile device”

Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
Not a limit for ’766 claims 1, 9, 24 and dependent claims.	“mobile device” is limiting as part of preamble.
	No additional construction necessary.

See Dkt. No. 102 at 15; Dkt. No. 121 at A1-6. The parties submit that this term appears in all claims of the ’111 Patent, the ’936 Patent, the ’586 Patent, and the ’766 Patent. *Id.*

Shortly before the start of the January 23, 2018 hearing, the Court provided the parties with the following preliminary construction: “A mobile device” (’936 Patent, Claims 1, 13, 25, 37, 51, 55, 59, 63, 65, 70, 74, 78, 84, 95, 99, 101, 103): Not limiting; “A mobile device” (’111 Patent, Claims 1, 17, 18): Not limiting; “A mobile device” (’586 Patent, Claims 1, 11): Limiting; “A mobile device” (’766 Patent, Claims 1, 9, 24): Not limiting; “a mobile device” (’766 Patent, Claim 17): Limiting.

(1) The Parties’ Positions

Plaintiff argues that this preamble term is not limiting because “the inventors did not rely on ‘mobile device’ during prosecution and the term provides no antecedent basis for any term in the claim body.” Dkt. No. 102 at 15.

Defendants respond that “mobile device” is limiting because it recites essential structure. Dkt. No. 106 at 13.

(2) Analysis

Claim 1 of the ’766 Patent, for example, recites (emphasis added):

1. *A mobile device*, comprising:
 - a USB communication path; and
 - a charging subsystem enabled to draw current unrestricted by at least one predetermined USB Specification limit, said enablement being responsive to an abnormal USB data condition detected at said USB communication path.

The term “mobile device” does not appear in the body of the claim, so the preamble does not provide any antecedent basis. Instead, the preamble “merely gives a name” to the claimed structure. *See Deere*, 703 F.3d at 1358; *see also IMS Tech.*, 206 F.3d at 1434. Claims 9 and 24 of the ’766 Patent are similar in this regard.

Claim 1 of the ’111 Patent, as another example, recites (emphasis added):

1. A Universal Serial Bus (“USB”) adapter for providing power to a *mobile device* through a USB port, comprising:

a plug unit configured to receive energy from a power socket;
a power converter coupled to the plug unit, the power converter being configured to regulate the received energy from the power socket to generate a power output;
an identification subsystem configured to generate an identification signal, wherein the identification signal is configured to indicate to *the mobile device* that the power socket is not a USB host or hub; and
a USB connector coupled to the power converter and the identification subsystem, the USB connector being configured to couple the power output and the identification signal to *the mobile device*.

Although “a mobile device” in the preamble of Claim 1 of the ’111 Patent provides antecedent basis for “the mobile device” recited in the body of the claim, Defendants have not shown that the preamble recites any additional relevant detail regarding the “mobile device.” *See Proveris*, 739 F.3d at 1373. Claims 17 and 18 of the ’111 Patent are similar in this regard, as are Claims 1, 13, 25, 37, 51, 55, 59, 63, 65, 70, 74, 78, 84, 95, 99, 101, and 103 of the ’936 Patent.

Defendants have emphasized the statement in the Abstracts of these patents that “[a]n adapter for providing a source of power to a mobile device through an industry standard port is provided.” This statement about “for providing,” however, merely underscores that the term “mobile device,” as used in these preambles, is a statement of purpose rather than a limitation. *See Catalina Mktg.*, 289 F.3d at 808; *see also Pitney Bowes*, 182 F.3d at 1305; *Marrin*, 599 F.3d at 1294–95; *Allen Eng’g*, 299 F.3d at 1346. Statements in the Background section of the written description are similar. *See, e.g.*, ’936 Patent at 1:24–25.

Defendants also submit that “[t]he specification . . . is replete with references to [‘mobile device,’] underscoring the importance of the feature to the claimed invention.” Dkt. No. 106 at 14 (quoting *Rotatable Techs. LLC v. Motorola Mobility LLC*, 567 F. App’x 941, 943 (Fed. Cir. June 27, 2014); citing ’550 Patent at 1:46–3:25). The disclosures cited by Defendants relate to the “purpose or intended use for the invention” and do not warrant finding that the preambles are

necessarily limiting in all instances. *Catalina*, 289 F.3d at 808 (quoting *Pitney Bowes*, 182 F.3d at 1305).

Claims 1 and 11 of the '586 Patent, however, rely upon the preambles to provide antecedent basis for “the mobile device” recited in the bodies of the claims, *and* the preambles provide additional detail regarding the “mobile device.” For example, the preamble of Claim 1 of the '586 Patent recites: “A mobile device, the mobile device configurable for use in a wireless telecommunications network” The preambles of these claims are therefore limiting. *See Proveris*, 739 F.3d at 1373 (“The phrase ‘the image data’ clearly derives antecedent basis from the ‘image data’ that is *defined in greater detail in the preamble* as being ‘representative of at least one sequential set of images of a spray plume.’”) (emphasis added). Claim 17 of the '766 Patent is similar in this regard. *See id.*

The Court therefore hereby construes this disputed term as set forth in the following chart:

<u>Term</u>	<u>Construction</u>
“A mobile device” (’936 Patent, Claims 1, 13, 25, 37, 51, 55, 59, 63, 65, 70, 74, 78, 84, 95, 99, 101, 103)	Not limiting
“A mobile device” (’111 Patent, Claims 1, 17, 18)	Not limiting
“A mobile device” (’586 Patent, Claims 1, 11)	Limiting
“A mobile device” (’766 Patent, Claims 1, 9, 24)	Not limiting
“a mobile device” (’766 Patent, Claim 17)	Limiting

I. “microprocessor”

Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
No construction necessary. If construed, “IC with capability to interpret and execute coded instructions.”	“a CPU on a single chip”

Dkt. No. 102 at 15; Dkt. No. 106 at 15; Dkt. No. 121 at A1-7. The parties submit that this term appears in Claim 11 of the ’586 Patent and dependent claims. *Id.*

Shortly before the start of the January 23, 2018 hearing, the Court provided the parties with the following preliminary construction: “a CPU on a single chip.”

(1) The Parties’ Positions

Plaintiff argues that Defendants’ proposal should be rejected because “[r]eplacing one technical term with another technical term is not proper claim construction.” Dkt. No. 102 at 15. Plaintiff submits that its proposed construction is consistent with a dictionary cited by Defendants as well as with Defendants’ expert’s testimony. *Id.* at 15–16.

Defendants respond that “[e]xtrinsic evidence confirms a microprocessor is a CPU on a single chip.” Dkt. No. 106 at 15.

(2) Analysis

Claim 11 of the ’586 Patent recites (emphasis added):

11. A method for charging a battery in a mobile device, the mobile device configurable for use in a wireless telecommunications network, comprising:
 providing a Universal Serial Bus (“USB”) interface configured to allow reception of a USB cable, and, to receiving [*sic*] power on a V-bus power line at the USB interface;
 providing an operable connection between the power received at the USB interface on the V-bus power line and a charging subsystem;
 having a battery in operable connection to the charging subsystem;
 providing power to the battery using the charger subsystem in one of a plurality of charge modes;

using a *microprocessor* and memory to process the signals received on the USB interface data lines, such that an identification signal received at the D+ and D- lines indicating a charging connection is available is recognized by the device.

The written description discloses:

The exemplary mobile device 10 comprises a microprocessor 12, a communication subsystem 14, input/output (“I/O”) devices 16, an industry standard interface 18 which in this example is a USB port, and a power subsystem 20. *The microprocessor 12 controls the overall operation of the mobile device 10.*

* * *

In implementing its control function, the microprocessor 12 in the exemplary mobile device 10 executes an operating system. The operating system software used by the microprocessor 12 is preferably stored in a persistent store such as flash memory 36, or alternatively read only memory (ROM) or similar storage element. The microprocessor 12 may also enable the execution of specific device applications, which preferably are also stored in a persistent store. The operating system, specific device applications, or parts thereof, may also be temporarily loaded into a volatile store such as in RAM 38.

’936 Patent at 3:44–49 & 4:46–56 (emphasis added). This intrinsic evidence does not address whether a “microprocessor” must be implemented on a single chip, as Defendants have proposed.

As to extrinsic evidence, Defendants have cited numerous dictionary definitions demonstrating that a “microprocessor,” as the term has been used in the relevant art, is a CPU implemented on a single chip. *See* Dkt. No. 127, Ex. 10, *Microsoft Computer Dictionary* 115 (4th ed. 1999) (defining “CPU” as “[a]cronym for central processing unit,” “[t]he computational and control unit of a computer”; referring to “[s]ingle-chip central processing units, called microprocessors”); *see also id.* at 290 (defining “microprocessor” as “[a] central processing unit (CPU) on a single chip”); Dkt. No. 106, Ex. 7, *The Computer Desktop Encyclopedia* 188, 608 (9th ed. 2001) (defining “microprocessor” as “[a] CPU on a single chip”); *id.*, Exs. 23–29.

This evidence supports Defendants’ proposed construction and is persuasive. *See Teva*, 135 S. Ct. at 841; *see also Phillips*, 415 F.3d at 1318 (“Because dictionaries, and especially technical dictionaries, endeavor to collect the accepted meanings of terms used in various fields of science and technology, those resources have been properly recognized as among the many tools that can assist the court in determining the meaning of particular terminology to those of skill in the art of the invention.”).

Also of note, these extrinsic technical definitions are consistent with the above-reproduced disclosure that “[t]he microprocessor 12 controls the overall operation of the mobile device 10.” ’936 Patent at 3:44–49.

The Court therefore hereby construes **“microprocessor”** to mean **“a CPU on a single chip.”**

J. “means for receiving energy from a power socket”

Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
<p>Function: “receiving energy from a power socket”</p> <p>Structure: “a plug unit and/or plug adapter compatible with a North American power socket, a UK power socket, a European power socket, or a car power socket; and the equivalents thereof”</p>	<p>Function: “receiving energy from a power socket”</p> <p>Structure: “a plug unit and/or plug adapter compatible with a North American power socket, a UK power socket, a European power socket, or a car power socket; and the equivalents thereof”</p>

Dkt. No. 102 at 16; Dkt. No. 121 at A1-7. The parties submit that this term appears in Claim 18 of the ’111 Patent. *Id.*

Defendants “ha[ve] agreed to the construction for ‘means for receiving energy from a power socket’” Dkt. No. 121 at 1–2; *see id.* at A1-7.

Thus, as agreed upon by the parties, the Court hereby finds that **“means for receiving energy from a power socket”** is a means-plus-function term, the function is **“receiving energy from a power socket,”** and the corresponding structure is **“a plug unit and/or plug adapter compatible with a North American power socket, a UK power socket, a European power socket, or a car power socket; and equivalents.”**

K. “means for generating an identification signal that indicates to the mobile device that the power socket is not a USB hub or host”

Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
Function: “generating an identification signal that indicates to the mobile device that the power socket is not a USB hub or host” Structure: “an identification subsystem such as one that includes a hardwired connection or a USB controller, or one that can electrically connect or disconnect power or data lines from the USB connector; and the equivalents thereof”	Function: “generating an identification signal that indicates to the mobile device that the power socket is not a USB hub or host” Structure: Indefinite

Dkt. No. 102 at 16; Dkt. No. 106 at 16; Dkt. No. 121 at A1-8. The parties submit that this term appears in Claim 18 of the ’111 Patent. *Id.*

Shortly before the start of the January 23, 2018 hearing, the Court provided the parties with the following preliminary construction: “Function: ‘generating an identification signal that indicates to the mobile device that the power socket is not a USB hub or host’ / Structure: ‘identification subsystem 108, and equivalents thereof.’”

(1) The Parties' Positions

Plaintiff argues: “The patent expressly describes the structures that provide this signal. Ex. 1 [’936 Patent], 8:19–32, Ex. 59, original claims 8–10; Ex. 13, ¶ 111.” Dkt. No. 102 at 16.

Defendants respond: “The specification nowhere describes structure that indicates whether the *power socket* is or is not a USB hub or host, and is therefore indefinite. FISI identifies structure for indicating to the mobile device that an *adapter* is connected to the mobile device, but that indicates nothing about whether the *power socket* (which the adapter plugs into) is a USB hub or host. Ex. 12 ¶ 140–145.” Dkt. No. 106 at 16.

At the January 23, 2018 hearing, the parties presented oral argument regarding this disputed term.

(2) Analysis

Title 35 U.S.C. § 112, ¶ 6 provides: “An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof.” “[S]tructure disclosed in the specification is ‘corresponding’ structure only if the specification or prosecution history clearly links or associates that structure to the function recited in the claim.” *Med. Instrumentation & Diagnostics Corp. v. Elekta AB*, 344 F.3d 1205, 1219 (Fed. Cir. 2003) (citation and internal quotation marks omitted).

The written description uses the phrase “power socket” to refer to, for example, “a North American AC power socket 110N that provides 115 VAC” that can accept “a two prong or three prong plug.” ’111 Patent at 7:12–26.

At least at first blush, the disclosure cited by Plaintiff relates to generating an identification signal that indicates to the mobile device that the “power *source*” or “USB *adapter*”—rather than the power *socket*—is not a USB hub or host:

The USB adapter 100 contributes to a system wherein a device 10 that follows the USB specification when coupled to a typical USB host via its USB port can be informed that the USB adapter 100 has been coupled to the device 10 and that the device 10 can now draw power without regard to the USB specification and the USB specification imposed limits.

The identification subsystem 108 provides an identification signal to the mobile device 10 that the *power source* is not a USB limited source. The identification signal could be the communication of a single voltage on one or more of the USB data lines, different voltages on the two data lines, a series of pulses or voltage level changes, or other types of electrical signals. The identification subsystem 108 that generates the identification signal could have multiple types of configurations. In one embodiment, the identification subsystem 108 comprises a hard-wired connection of a single voltage level to both data lines. In another embodiment, the identification subsystem 108 comprises a USB controller that is operable to communicate an identification signal to the mobile device. Additional embodiments are contemplated. The identification subsystem 108 may optionally be configured to have the capability of electrically connecting or disconnecting the power output from the power converter 104 from the USB connector 102 and/or to connect or disconnect any data inputs from the USB adapter 100 to the USB connector 102.

’111 Patent at 8:17–42 (emphasis added).

Nonetheless, the written description uses the phrase “power *source*” to encompass USB “hubs and hosts” as well as “alternate power *sources* such as conventional AC *outlets* and DC car *sockets*.” ’111 Patent at 1:54–67 (emphasis added). The above-reproduced disclosure regarding the “identification subsystem 108” is thus sufficiently linked to the claimed function of indicating that the power socket is not a USB hub or host.

The Court therefore hereby finds that “**means for generating an identification signal that indicates to the mobile device that the power socket is not a USB hub or host**” is a means-plus-function term, the claimed function is “**generating an identification signal that**

indicates to the mobile device that the power socket is not a USB hub or host,” and the corresponding structure is “identification subsystem 108, and equivalents thereof.”

L. “means for coupling the power output and identification signal to the mobile device”

Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
Function: “coupling the power output and identification signal to the mobile device” Structure: “a USB connector; and the equivalents thereof”	Function: “coupling the power output and identification signal to the mobile device” Structure: “USB connector 102 and USB connector 54 and Figure 2 (connection between 102 and 54), and equivalents thereof”

Dkt. No. 102 at 16; Dkt. No. 106 at 16; Dkt. No. 121 at A1-8. The parties submit that this term appears in Claim 18 of the ’111 Patent.

Shortly before the start of the January 23, 2018 hearing, the Court provided the parties with the following preliminary construction: “Function: ‘coupling the power output and identification signal to the mobile device’ / Structure: ‘USB connector 102 and USB connector 54; and equivalents thereof.’”

(1) The Parties’ Positions

Plaintiff argues: “SS’s identified structure is over-inclusive. It includes USB connector 54, which is part of a mobile device instead of the claimed USB adapter. *E.g.* [], Ex. 13, ¶¶ 114–115; Ex. 2, Fig. 2, claim 20.” Dkt. No. 102 at 16.

Defendants respond: “[T]he USB connector in the specification is USB connector 102 and USB connector 54. Fig. 2; ’550 at 6:21–28, 6:61–7:16, 7:46–48, 9:26–64. While [Plaintiff] argues that [Defendants’] construction is overbroad for including the mobile device side, the

claim recites ‘coupling the power output and identification signal to the mobile device,’ which includes, rather than excludes, the mobile device connector.” Dkt. No. 106 at 16.

At the January 23, 2018 hearing, the parties presented oral argument regarding this disputed term.

(2) Analysis

Defendants have argued that in order for there to be “coupling” between the power source and the mobile device, there must be a connection at both ends of the “coupling.”

Plaintiff has argued that the structure for the recited “coupling” is limited to the connection at the power source. In particular, Plaintiff emphasizes that the claim (Claim 18 of the ’111 Patent) recites an “adapter for providing a source of power *to* a mobile device,” which Plaintiff argues indicates that the “means for coupling” does not include any part of the mobile device:

18. A Universal Serial Bus (“USB”) *adapter* for providing a source of power to a mobile device through a USB port, comprising:
 means for receiving energy from a power socket;
 means for regulating the received energy from the power socket to generate a power output;
 means for generating an identification signal that indicates to the mobile device that the power socket is not a USB hub or host; and
 means for coupling the power output and identification signal to the mobile device.

Plaintiff’s argument in this regard is at odds with Plaintiff’s above-addressed argument that the preamble of this claim is not limiting. Also, Defendants’ proposal is more consistent with the disclosure in the written description:

In the embodiment shown in FIG. 2, the primary USB connector 102 is configured to mate with the USB connector 54 of the mobile device 10. The USB adapter 100 is operable to provide power to the mobile device 10 through the Vbus and Gnd power pins in the USB connectors 54 and 102. The USB adapter 100 also optionally provides a communication path for data across the D+ and D- data pins in the USB connectors 54 and 102.

'550 Patent at 7:9–16; *see id.* at 6:21–28, 6:61–7:16, 7:46–48 & 9:26–64. At the January 23, 2018 hearing, Defendants were amenable to the Court's above-noted preliminary construction.

The Court therefore hereby finds that **“means for coupling the power output and identification signal to the mobile device”** is a means-plus-function term, the claimed function is **“coupling the power output and identification signal to the mobile device,”** and the corresponding structure is **“USB connector 102 and USB connector 54; and equivalents thereof.”**

VI. CONSTRUCTION OF DISPUTED TERMS IN THE '319 PATENT FAMILY

M. “battery charge controller”

Plaintiff's Proposed Construction	Defendants' Proposed Construction
“circuitry that manages charging of a battery”	No construction necessary. Alternatively: “the controller that manages charging of the battery”

Dkt. No. 102 at 17; Dkt. No. 106 at 20; Dkt. No. 121 at A2-1. The parties submit that this term appears in all claims of the '319 Patent and the '514 Patent. *Id.*

Shortly before the start of the January 23, 2018 hearing, the Court provided the parties with the following preliminary construction: “controller that manages charging of a battery.”

(1) The Parties' Positions

Plaintiff urges that “[Defendants'] refusal to acknowledge that a controller is circuitry makes no sense.” Dkt. No. 102 at 17.

Defendants respond that “[b]ecause the term is ‘controller,’ it should mean the controller—not the sub-portion of circuitry in the controller that FISI deems convenient for its infringement theories.” Dkt. No. 106 at 20.

Plaintiff replies that “[t]he naming conventions of manufactures [sic] do not define the requirements of a battery charge controller circuit of the patents.” Dkt. No. 114 at 6.

(2) Analysis

Claim 1 of the '319 Patent, for example, recites (emphasis added):

1. A battery charging circuit, comprising:

a semiconductor switch having an output connected to a rechargeable battery and configurable to isolate the rechargeable battery from a portable device;

a *battery charge controller* configured to receive power from an external universal serial bus (USB) port, and supply output power to the portable device having at least one function unrelated to the *battery charge controller* and to the rechargeable battery through the switch;

the *battery charge controller* being further configured to limit the output power such that the portable device and the rechargeable battery may not draw more than a pre-determined maximum current available from the USB port; and

a voltage sensing circuit configured to measure a voltage drop across the *battery charge controller*, and respond to the voltage drop across the *battery charge controller* by modulating the switch to control an amount of current supplied to the rechargeable battery such that the portable device receives a predetermined amount of power needed to operate and the rechargeable battery receives a remainder of the power available from the *battery charge controller*.

The written description refers to “standard” battery charge controllers:

It is therefore an object of the invention to provide a novel method and apparatus which allows *standard battery charge controllers* to be supplied from standard computer data ports and other power sources, which obviates or mitigates at least one of the disadvantages of the prior art.

* * *

A circuit which overcomes a number of the problems in the art, is presented as a block diagram in FIG. 4. This figure presents a battery charging circuit built around a *standard battery charge controller 20*. In this embodiment of the invention, the *battery charge controller 20* receives power from an external source (V_{BUS}) and feeds a portable device 18 and rechargeable battery or batteries 24 in parallel, but the feed to the battery 24 is made via a semiconductor switch Q1. Control of the current flow through the semiconductor switch Q1 is modulated by a voltage sensing circuit 30 which measures the voltage drop across the *battery charge controller 20* and reduces the current flow through the semiconductor switch Q1 to the battery 24 when the voltage drop is too great.

'319 Patent at 4:3–7 & 5:30–42 (emphasis added).

The written description further states that “[t]he battery chargers of these portable devices also generally employ a ‘battery charge controller’ to manage the charging of the battery.” ’319 Patent at 1:22–24. The use of quotation marks around “battery charge controller,” without any definition then being provided, can be fairly read as an indication by the patentee that the term “battery charge controller” is a well-known term of art, particularly in light of the accompanying usage of the word “generally.” Indeed, this disclosure is immediately followed by a listing of functionality that “such battery charge controllers offer.” *Id.* at 1:24–35.

Finally, the written description provides two specific examples of battery charge controllers, namely “an NCP1800 battery charge controller” and “a Texas Instruments bq24020 Lithium Ion battery charge controller.” *Id.* at 7:50–51 & 9:65–66; *see id.* at 7:56–58 (“The NCP1800 battery charge controller 50 is a standard, single-cell, Lithium ion battery charge controller as known in the art.”).

The written description thus demonstrates that the term “battery charge controller” has had a “standard” meaning in the art. *See id.* at 4:3–7, 5:30–42 & 7:56–58 (quoted above). Plaintiff’s proposed construction, by contrast, is directed to potentially merely portions of such battery charge controllers, as reflected by deposition testimony of Plaintiff’s expert. *See* Dkt. No. 106, Ex. 42, Nov. 21, 2017 Fernald dep. at 254:18–21; *see also id.* at Ex. 43 (deposition exhibit, NCP1800 datasheet). The Court therefore rejects Plaintiff’s proposed construction. Nonetheless, “some construction of the disputed claim language will assist the jury to understand the claims.” *TQP Dev., LLC v. Merrill Lynch & Co., Inc.*, No. 2:08-CV-471, 2012 WL 1940849, at *2 (E.D. Tex. May 29, 2012) (Bryson, J., sitting by designation).

The Court accordingly hereby construes **“battery charge controller”** to mean **“controller that manages charging of a battery.”**

N. “voltage drop across [a/the] battery charge controller” and “voltage drop across a controller”

Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
“voltage difference between two terminals of (a/the) battery charge controller / voltage difference between two terminals of a controller”	“voltage drop equal to the power dissipated by [a/the] [battery charge] controller divided by current”

Dkt. No. 102 at 17–18; Dkt. No. 106 at 20; Dkt. No. 121 at A2-1. The parties submit that these terms appear in all claims of the ’319 Patent and the ’514 Patent, as well as Claim 22 of the ’983 Patent and dependent claims. *Id.*

Shortly before the start of the January 23, 2018 hearing, the Court provided the parties with the following preliminary construction: “voltage difference between an input of a battery charge controller and an output of the battery charge controller.”

(1) The Parties’ Positions

Plaintiff argues that whereas its proposal is consistent with the plain and ordinary meaning of “voltage drop,” Defendants’ proposal “is inconsistent with a large number of embodiments in the specification.” Dkt. No. 102 at 18.

Defendants respond that “[Defendants’] construction . . . embodies the law of nature $P=VI$, written in terms of voltage drop as $V=P/I$.” Dkt. No. 106 at 20. Defendants also submit that the specification as well as extrinsic evidence confirm that “across” means from one side to the other. *Id.* at 21.

Plaintiff replies that “[t]he claims do not recite power dissipation in any form and the Court should not import the limitation.” Dkt. No. 114 at 7.

At the January 23, 2018 hearing, the parties presented oral argument regarding these disputed terms.

(2) Analysis

Claim 1 of the '319 Patent, for example, recites (emphasis added):

1. A battery charging circuit, comprising:
 - a semiconductor switch having an output connected to a rechargeable battery and configurable to isolate the rechargeable battery from a portable device;
 - a battery charge controller configured to *receive power* from an external universal serial bus (USB) port, and *supply output power* to the portable device having at least one function unrelated to the battery charge controller and to the rechargeable battery through the switch;
 - the battery charge controller being further configured to limit the output power such that the portable device and the rechargeable battery may not draw more than a pre-determined maximum current available from the USB port; and
 - a voltage sensing circuit configured to measure a *voltage drop across the battery charge controller*, and respond to the *voltage drop across the battery charge controller* by modulating the switch to control an amount of current supplied to the rechargeable battery such that the portable device receives a predetermined amount of power needed to operate and the rechargeable battery receives a remainder of the power available from the battery charge controller.

The claim thus provides context that the battery charge controller receives power and outputs power, and the “voltage drop across the battery charge controller” refers to a drop from an input voltage to an output voltage. *See Phillips*, 415 F.3d at 1314 (“the context of the surrounding words of the claim also must be considered in determining the ordinary and customary meaning of those terms”) (citation and internal quotation marks omitted).

The written description is consistent with this interpretation, disclosing that “the voltage drop across the battery charge controller 20 could simply be measured by comparing the voltage at the input and output of the battery charge controller 20, as shown in FIG. 4.” ’319 Patent at 5:57–60; *see id.* at Fig. 4; *see also id.* at 13:41–54; Dkt. No. 106, Ex. 56, Response to Office Action Dated August 3, 2007 at 10–11. This interpretation is also consistent with an extrinsic

dictionary definition submitted by Defendants. Dkt. No. 106, Ex. 46, *McGraw-Hill Dictionary of Scientific and Technical Terms* 2268 (6th ed. 2003) (defining “voltage drop” as “[t]he voltage developed across a component or conductor by the flow of current through the resistance or impedance of that component or conductor”). The Figure 6 alternative cited by Plaintiff is disclosed as just that, an alternative:

Also in the embodiments described hereinafter, the voltage sensing circuit 30 itself is provided via an operational amplifier (op amp). Thus, the voltage drop across the battery charge controller 20 could simply be measured by comparing the voltage at the input and output of the battery charge controller 20, as shown in FIG. 4. *Alternatively*, one input to the op amp could be taken from the output of the battery charge controller 20, while the other could be some reference voltage V_{REF} ; either emulating the V_{BUS} input to the battery charge controller 20, or being scaled in some manner.

’319 Patent at 5:55–65 (emphasis added). This is true notwithstanding Defendants’ proposal, as to the “means for measuring a voltage drop across a battery charge controller . . .” term (addressed below), of corresponding structure with reference to Figure 6.

To whatever extent Plaintiff’s proposal of merely “two terminals” is meant to encompass any two terminals (rather than an input and an output) or is meant to encompass measuring a difference between an output voltage and some reference voltage (*see* ’319 Patent at 5:60–64 & 8:13–26; *see also id.* at Cl. 4), any such interpretation is inconsistent with the intrinsic evidence discussed above and is therefore hereby rejected. Also, the construction should clarify that the voltage difference is between a power input and a power input and does not involve, for example, a “temperature sense input” such as in the exemplary Texas Instruments bq24020. *See* ’319 Patent at 9:65–66; *see also* Dkt. No. 106, Ex. 45 at 5–6.

Finally, the claim does not refer to power dissipation, let alone to measuring the voltage drop in terms of power dissipation. Indeed, the written description discloses objectives other than managing power dissipation, such as that “[e]ven if the battery 24 is in a deep-discharge

state, the portable device 18 will still see a voltage that is high enough for proper operation.” *Id.* at 7:20–31; *see id.* at Cl. 1 (“control an amount of current supplied to the rechargeable battery such that the portable device receives a predetermined amount of power needed to operate”). Also, although the written description discloses that “the power dissipated by the battery charge controller 20[] is the product of I_{CHARGE} and V_{DROP} ,” this disclosure relates to determining power dissipation based on current and voltage drop, *not* determining voltage drop based on power dissipation and current. *Id.* at 6:64–65; *see id.* at 5:43–46, 7:13–14 & 13:46–49; *see also id.* at 5:65–6:3. The Court therefore rejects Defendants’ proposed construction.

The Court accordingly hereby construes **“voltage drop across [a/the] battery charge controller”** and **“voltage drop across a controller”** to mean **“voltage drop between a power input of a battery charge controller and a power output of the battery charge controller.”**

O. “power”

Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
No additional construction necessary at this time (<i>i.e.</i> , plain and ordinary meaning in light of the intrinsic evidence) or “electrical energy supplied from a source”	“product of voltage drop and current”

Dkt. No. 102 at 19; Dkt. No. 106 at 19; Dkt. No. 121 at A2-1. The parties submit that this term appears in all claims of the ’319 Patent, the ’514 Patent, and the ’983 Patent. *Id.*

Shortly before the start of the January 23, 2018 hearing, the Court provided the parties with the following preliminary construction: “electricity.”

(1) The Parties’ Positions

Plaintiff argues that the plain meaning of “power,” as reflected by dictionary definitions, is consistent with the context in which “power” is used in the claim. Dkt. No. 102 at 19.

Defendants respond that “[Defendants’] construction is $P = VI$, ‘the well-established, textbook definition of “power.”’” Dkt. No. 106 at 19 (quoting *Symbol Techs., Inc. v. Janam Techs. LLC*, 605 F. Supp. 2d 618, 621 (D. Del. 2009)). Defendants also argue that the “ $P=VI$ ” relationship is set forth in the specification and is confirmed by extrinsic evidence. Dkt. No. 106 at 19. Defendants urge that “[t]he power delivered to a device is simply and axiomatically the product of voltage drop (relative to ground) and current.” *Id.* at 19–20.

Plaintiff replies that Defendants’ proposed construction “is not only unduly narrow but inconsistent with the ‘law of nature’ argument it touts.” Dkt. No. 114 at 8.

At the January 23, 2018 hearing, the parties presented oral argument regarding this disputed term.

(2) Analysis

The written description states, for example, that “[b]attery chargers generally receive power from a standard AC electrical outlet and *convert the AC power into a low DC voltage* for recharging a battery.”) (emphasis added). ’319 Patent at 1:19–21. The patentee thus appears to have used the word “power” in an informal manner rather than in the formal manner proposed by Defendants, “product of voltage drop and current.” *See id.*; *see also id.* at 4:33–34 & 14:13–14 (referring to an “external power supply” as well as “conventional AC power supplies (often referred to as ‘bricks’)”); *see also* Dkt. No. 102, Ex. 61, *Microsoft Computer Dictionary* 352 (4th ed. 1999) (including a definition of “power” as: “In computing, the electricity used to run a computer”); ’319 Patent at Cl. 1 (“such that the portable device receives a predetermined amount of power needed to operate and the rechargeable battery receives a remainder of the power available from the battery charge controller”).

Finally, as to Defendants’ proposal of voltage “drop,” Defendants’ own expert acknowledges that power can be varied even where voltage is kept constant. Dkt. No. 102, Ex. 27, Nov. 21, 2017 Wei dep. at 52:17–53:9.

The Court therefore rejects Defendants’ proposed construction. Nonetheless, “some construction of the disputed claim language will assist the jury to understand the claims.” *TQP*, 2012 WL 1940849, at *2.

The Court accordingly hereby construes **“power”** to mean **“electricity.”**

P. “a remainder of [the] power available from the battery charge controller” and “a remainder of the received power”

<p>“a remainder of the power available from the battery charge controller” (’319 Patent, Claims 1, 14, 19; ’514 Patent, Claim 1)</p> <p>“a rem[a]inder of power available from the battery charge controller” (’514 Patent, Claims 18, 20)</p>	
Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
“[such that . . . the rechargeable battery receives] <i>a portion</i> of the power available from the battery charge controller that is not used by the portable device”	“[such that . . . the rechargeable battery receives] <i>the remaining</i> power available from the battery charge controller”
<p>“a remainder of the received power” (’319 Patent, Claim 20)</p>	
Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
“[such that . . . the rechargeable battery receives] <i>a portion</i> of the power received from the USB port that is not used by portable device”	“[such that . . . the rechargeable battery receives] <i>the remaining</i> received power”

Dkt. No. 102 at 20 (emphasis Plaintiff's); Dkt. No. 106 at 23 (emphasis Defendants'); Dkt. No. 121 at A2-4. The parties submit that these terms appear in all claims of the '319 Patent and the '514 Patent. *Id.*

Shortly before the start of the January 23, 2018 hearing, the Court provided the parties with the following preliminary constructions for the above-charted groups of terms, respectively: “the remaining power available from the battery charge controller”; and “the remaining received power.”

(1) The Parties' Positions

Plaintiff argues that Defendants' proposed construction “excludes the preferred embodiment in the specification because it would require power dissipated by the battery isolation switch to be delivered to the battery, which is impossible.” Dkt. No. 102 at 21.

Defendants respond that “[t]he ordinary meaning of ‘a remainder’ is resolved by the applicant’s statements during prosecution, where it distinguished prior art on the basis that ‘a remainder’ means ‘*the* remainder.’” Dkt. No. 106 at 23. Defendants also cite disclosures in the written description as well as extrinsic evidence. *Id.*

Plaintiff replies, as to the prosecution history cited by Defendants, that “[t]he question of whether ‘a remainder’ or ‘the remainder’ requires 100% of remaining power was not a subject of discussion in the prosecution passage, and this point was never used as a basis to distinguish the prior art.” Dkt. No. 114 at 8. Plaintiff also argues that “[Plaintiff’s] construction does not render other parts of the claim superfluous because ‘a remainder’ makes clear that power is first supplied to the device and the battery receives a portion of the *surplus* power after the device’s power need is satisfied.” *Id.*

At the January 23, 2018 hearing, the parties presented oral argument regarding these disputed terms.

(2) Analysis

Claim 1 of the '319 Patent, for example, recites (emphasis added):

1. A battery charging circuit, comprising:
 - a semiconductor switch having an output connected to a rechargeable battery and configurable to isolate the rechargeable battery from a portable device;
 - a battery charge controller configured to receive power from an external universal serial bus (USB) port, and supply output power to the portable device having at least one function unrelated to the battery charge controller and to the rechargeable battery through the switch;
 - the battery charge controller being further configured to limit the output power such that the portable device and the rechargeable battery may not draw more than a pre-determined maximum current available from the USB port; and
 - a voltage sensing circuit configured to measure a voltage drop across the battery charge controller, and respond to the voltage drop across the battery charge controller by modulating the switch to control an amount of current supplied to the rechargeable battery such that the portable device receives a predetermined amount of power needed to operate and the rechargeable battery receives *a remainder of the power available from the battery charge controller*.

Claim 20 of the '319 Patent recites (emphasis added):

20. A system for charging a rechargeable battery for a portable device having a function unrelated to charging the rechargeable battery, using power supplied by a universal serial bus (USB) port, comprising:
 - means for receiving power from the USB port;
 - means for supplying the received power to the rechargeable battery and to the portable device, wherein the supplied power is limited such that the rechargeable battery and the portable device may not draw more than a pre-determined maximum amount of current available from the USB port; and
 - means for both isolating the rechargeable battery from the portable device and controlling an amount of current supplied to the rechargeable battery such that the portable device receives a pre-determined amount of the received power needed to operate and the rechargeable battery receives *a remainder of the received power*.

As to the prosecution history of the '319 Patent cited by Defendants, the patentee distinguished the Matsuda reference, United States Patent No. 6,211,649:

[T]he cited portion of Matsuda only discloses switching power on and off to the battery. This feature is not the same as modulating a switch to arrange for a predetermined power to reach the mobile device, with the remainder of the power reaching the rechargeable battery, as in claim 1.

Dkt. No. 106, Ex. 49, Oct. 22, 2009 Appeal Brief at 18; *see id.* at 19–21. Distinguishing switching power on and off does not amount to a definitive statement that would warrant interpreting “a remainder of the power” to necessarily mean *all* remaining power. *See Omega Eng’g, Inc. v. Raytek Corp.*, 334 F.3d 1314, 1324 (Fed. Cir. 2003) (“As a basic principle of claim interpretation, prosecution disclaimer promotes the public notice function of the intrinsic evidence and protects the public’s reliance on *definitive* statements made during prosecution.”) (emphasis added).

Defendants have acknowledged that “POSAs would understand that ‘a remainder of the power available from the battery charge controller’ is the power left over after subtracting power consumed by other parts of the circuitry, including the portable device, switch, and parasitic resistances of the wires. Thus, ‘a remainder of the power’ does not necessarily mean *all* of the remaining power.” Dkt. No. 106 at 24; *see id.*, Ex. 39, Dec. 19, 2017 Wei Decl. at ¶ 65.

Instead, the most reasonable reading of the claim language is that “a remainder” refers to whatever power remains that is not otherwise incidentally lost or consumed, such as by other related components or by connections between components. This meaning is also apparent from the usage of the word “available” in above-reproduced Claim 1 of the ’319 Patent. Likewise, the written description refers to “available” power. *See, e.g.*, ’319 Patent at 4:21–23 (“the portable device receiving the power it needs to operate and the rechargeable battery receiving any additional available power”), 8:60–9:9 & 13:54–57 (“In this way, the total power dissipated by the battery charge controller 20 is controlled; the portable device 18 receiving the power it needs to operate and the rechargeable battery 24 receiving any additional available power.”). An

extrinsic dictionary definition submitted by Defendants provides additional support. *See* Dkt. No. 106, Ex. 29, *The American Heritage Dictionary of the English Language* 1475 (4th ed. 2000) (including a definition of “remainder” as “[s]omething left over after other parts have been taken away”).

Finally, although the indefinite article “a” typically means “one or more,” “[w]hen the claim language and specification indicate that ‘a’ means one and only one, it is appropriate to construe it as such even in the context of an open-ended ‘comprising’ claim.” *Harari v. Lee*, 656 F.3d 1331, 1341 (Fed. Cir. 2011).

The Court therefore hereby construes the disputed terms as set forth in the following chart:

<u>Term</u>	<u>Construction</u>
“a remainder of the power available from the battery charge controller” “a rem[a]inder of power available from the battery charge controller”	“the remaining power available from the battery charge controller”
“a remainder of the received power”	“the remaining received power”

Q. “reference voltage” and “reference voltage signal”

<p align="center">“reference voltage” (’319 Patent, Claims 4, 5; ’514 Patent, Claims 4, 8; ’983 Patent, Claims 7, 16)</p>	
Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
“a voltage <i>level</i> against which a voltage of interest is compared”	“a voltage against which a voltage of interest is compared”

<p style="text-align: center;">“reference voltage signal” ('319 Patent, Claims 4, 10; '514 Patent, Claims 4, 5, 19)</p>	
Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
“a voltage <i>level</i> against which a voltage of interest is compared”	Plain and ordinary meaning. “Reference voltage” should be construed as above.

Dkt. No. 102 at 21 (emphasis added); Dkt. No. 106 at 24; Dkt. No. 121 at A2-4 (emphasis added).

Shortly before the start of the January 23, 2018 hearing, the Court provided the parties with the following preliminary constructions for the above-charted terms, respectively:

“a voltage against which a voltage of interest is compared”; and “signal related to a reference voltage.”

(1) The Parties’ Positions

Plaintiff argues: “[Defendants’] expert confirms that a ‘signal’ need not be the voltage itself but maybe [*sic*] information ‘representing a reference voltage.’ Ex. 26 [Wei Op.], 15–16; *see also*, Ex. 13.” Dkt. No. 102 at 21.

Defendants respond that “[t]he patentee consistently used the term ‘voltage’ when it wanted to claim voltage, and broader terms (*e.g.*, ‘voltage value’) when it wanted to claim something broader” Dkt. No. 106 at 24. Defendants further argue that the specifications “describe[] the reference voltage as a voltage, and in all embodiments it is a voltage.” *Id.* at 25. Defendants likewise urge that “a ‘reference *voltage*’ is an electric potential used as a reference, not a digital encoding further representing a ‘voltage value.’” *Id.*

Plaintiff replies that “reference voltage is a generic term that encompasses the more specific []reference ‘voltage signal’ or a reference ‘voltage value.’” Dkt. No. 114 at 9. Plaintiff also argues that Defendants’ proposed interpretation would exclude embodiments disclosed in the specification. *Id.*

At the January 23, 2018 hearing, the parties presented oral argument regarding these disputed terms.

(2) Analysis

Claims 4 and 5 of the ’319 Patent, for example, recite (emphasis added):

4. The battery charging circuit of claim 3 where the voltage sensing circuit comprises:
an operational amplifier configured to compare a voltage signal from the battery charge controller with a *reference voltage signal*, and further configured to respond to a voltage difference in which the voltage signal is less than the *reference voltage* by reducing the current to the rechargeable battery.
5. The battery charging circuit of claim 3, wherein the voltage sensing circuit includes an operational amplifier for *comparing the voltage* on the output of the battery charge controller to a *reference voltage*.

Plaintiff has failed to persuasively demonstrate that “reference voltage is a generic term that encompasses the more specific []reference ‘voltage signal’ or a reference ‘voltage value.’” Dkt. No. 114 at 9. Instead, whereas “reference voltage” refers to a particular voltage, “voltage signal” refers to a signal related to a particular voltage. *Compare* ’514 Patent at Cl. 8 (“comparing the voltage on the output of the battery charge controller to a reference voltage”) *with* Cl. 19 (“comparing a voltage signal from the battery charge controller with a reference voltage signal”). The written description is consistent with this interpretation. *See* ’319 Patent at 5:60–64 & 8:13–28. Thus, Plaintiff has not demonstrated that reference “voltage” should be interpreted as a voltage “level” (such as might be indicated by a digital value) rather than an actual voltage. The deposition testimony of Defendants’ expert cited by Plaintiff does not

compel otherwise, instead merely confirming that a “voltage” can be *represented* by a value. *See* Dkt. No. 114, Ex. 4, Nov. 21, 2017 Wei dep. at 68:23–69:24, 126:13–22 & 137:16–22 (“a reference voltage is a voltage that can take on a particular value and . . . that value can be specified in a datasheet, it can be specified in a register”).

The Court therefore hereby construes the disputed terms as set forth in the following chart:

<u>Term</u>	<u>Construction</u>
“reference voltage”	“a voltage against which a voltage of interest is compared”
“reference voltage signals”	“signal related to a reference voltage”

R. “a [semiconductor] switch”

<p align="center">“a switch” (’514 Patent, All Claims; ’983 Patent, All Claims)</p>	
Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
“one or more devices or circuits that control conductance between two nodes and that are capable of operating in on, off and non-transient linear modes”	“single switch”
<p align="center">“a semiconductor switch” (’319 Patent, Claims 1, 12, 14, 19)</p>	
Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
“switch as defined above that comprises semiconductor material”	“single semiconductor switch”

Dkt. No. 102 at 22; Dkt. No. 106 at 26; Dkt. No. 121 at A2-3.

Shortly before the start of the January 23, 2018 hearing, the Court provided the parties with the following preliminary construction: “Plain meaning (Note: (1) The same switch performs all of the functions recited in a particular claim; but (2) a switch may include multiple discrete subcomponents.)”

(1) The Parties’ Positions

Plaintiff submits that “a” means “one or more,” and “[t]he specification places no limits on the number of transistor devices that can be used to create the switches in the figures.” Dkt. No. 102 at 22.

Defendants respond that the claims, the prosecution history, and Plaintiff’s opening brief all confirm that the same switch must perform each of the recited functions. Dkt. No. 106 at 26. Nonetheless, Defendants submit that their proposed construction “permits a switch to be formed from multiple connected transistors.” *Id.* Defendants conclude that although Defendants “agree[] the claims permit multiple switches in general,” “the same switch (a single switch) must perform the claimed functions.” *Id.* at 26–27.

Plaintiff replies that a switch can be formed from multiple components, and Plaintiff also argues that “both of the patent families require that ‘a switch’ not just turn on or off, but allow for adjustment of the amount of current that flows” Dkt. No. 114 at 10.

(2) Analysis

Plaintiff’s proposal of referring to “on, off and non-transient linear modes” is unnecessary and would tend to confuse rather than clarify the scope of the claims. Further, Plaintiff’s proposal would potentially exclude pulse width modulation (“PWM”), which is mentioned in the written description of the ’173 Patent. ’173 Patent at 4:34–49; *see* Dkt. No. 106, Ex. 39, Dec. 19, 2017 Wei Decl. at ¶ 87 (“a standard way of modulating a switch is to

turn it on and off at a high frequency without a ‘non-transient linear mode,’ as in pulse-width modulation (PWM) converters”). The written description passages cited by Plaintiff do not compel otherwise. *See* ’319 Patent at 8:17–21 (referring to “drain source resistance”), 8:34–36 & 12:60–65.

Further, whereas Defendants have proposed clarifying that the same switch must perform the recited functions throughout each claim, Plaintiff does not appear to dispute this. *See* Dkt. No. 102 at 23 (regarding patentee’s statement during prosecution that “Claim 20 of the pending application requires a single semiconductor switch for isolating the rechargeable battery from the device,” Plaintiff states that “[Plaintiff] agrees that based on this statement the same ‘a switch’ performs each of the recited functions . . .”).

Instead, Plaintiff merely maintains that a “switch” can be made up of multiple components working together. To whatever extent Defendants are arguing that a “switch” must be a single component and cannot be made of up multiple discrete subcomponents, such an interpretation would improperly import a specific feature from particular disclosed embodiments. *See Phillips*, 415 F.3d at 1323. Also of note, Defendants’ expert has testified that multiple subcomponents can be arranged together so as to act as a single component. *See* Dkt. No. 102, Ex. 27, Nov. 21, 2017 Wei dep. at 77:5–78:1 & 79:3–80:8; *see also id.*, Ex. 13, Dec. 5, 2017 Fernald Decl. at ¶ 154.

The Court therefore hereby expressly rejects Defendants’ proposed constructions. No further construction is necessary. *See U.S. Surgical Corp. v. Ethicon, Inc.*, 103 F.3d 1554, 1568 (Fed. Cir. 1997) (“Claim construction is a matter of resolution of disputed meanings and technical scope, to clarify and when necessary to explain what the patentee covered by the claims, for use in the determination of infringement. It is not an obligatory exercise in

redundancy.”); *see also* *O2 Micro Int’l Ltd. v. Beyond Innovation Tech. Co.*, 521 F.3d 1351, 1362 (Fed. Cir. 2008) (“[D]istrict courts are not (and should not be) required to construe every limitation present in a patent’s asserted claims.”); *Finjan, Inc. v. Secure Computing Corp.*, 626 F.3d 1197, 1207 (Fed. Cir. 2010) (“Unlike *O2 Micro*, where the court failed to resolve the parties’ quarrel, the district court rejected Defendants’ construction.”); *ActiveVideo Networks, Inc. v. Verizon Commcn’s, Inc.*, 694 F.3d 1312, 1326 (Fed. Cir. 2012); *Summit 6, LLC v. Samsung Elecs. Co., Ltd.*, 802 F.3d 1283, 1291 (Fed. Cir. 2015).

The Court accordingly hereby finds that **“a switch”** and **“a semiconductor switch”** have their **plain meaning**.

S. “the voltage sensing circuit” and “[the controller] is configured to control the switch in response to the voltage drop to provide sufficient power for operation of the device”

“the voltage sensing circuit” (’983 Patent, Claims 7, 8, 15–17)	
Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
the sensing circuit that is configured to determine power supplied to the portable electronic device recited in claims 1 and 9	Indefinite

<p align="center">“[the controller] is configured to control the switch in response to the voltage drop to provide sufficient power for operation of the device” (’983 Patent, Claims 10, 19)</p>	
Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
<p>“the voltage drop”: the voltage drop measured by the sensing circuit as part of determining power supplied to the portable device in claims 9 and 18; the remaining term requires no additional construction necessary at this time (<i>i.e.</i>, plain and ordinary meaning in light of the intrinsic evidence)</p>	Indefinite

Dkt. No. 102 at 23–24; Dkt. No. 106 at 27; Dkt. No. 121 at A2-5–A2-6.

Shortly before the start of the January 23, 2018 hearing, the Court provided the parties with the following preliminary construction: “Indefinite.”

(1) The Parties’ Positions

Plaintiff argues, as to Claims 10 and 19 of the ’983 Patent, that Defendants’ indefiniteness argument should be rejected because “the recitation of a ‘sensing circuit’ configured to determine power supplied to the device in the independent claims inherently discloses the ability to measure a ‘voltage drop.’” Dkt. No. 102 at 24. As to Claims 7, 8 and 15–17 of the ’983 Patent, Plaintiff likewise argues that “[t]he patent disclosure makes clear that ‘a sensing circuit configured to determine power supplied to the portable electronic device’ is a ‘voltage sensing circuit.’” *Id.*

Defendants respond that the language relied upon by Plaintiff does not provide antecedent basis because it “does not mention a voltage drop,” “[n]or would a POSA find it inherent—the claimed sensing circuit need not measure voltage drop, but could determine power

by directly measuring heat dissipation or by measuring current and resistance.” Dkt. No. 106 at 27.

At the January 23, 2018 hearing, the parties presented oral argument regarding these disputed terms.

(2) Analysis

As Defendants have pointed out, “the voltage drop” in Claim 10 lacks explicit antecedent basis. Claims 9 and 10 of the ’983 Patent recite (emphasis added):

9. A portable electronic device including a graphical user interface and an interface for communicating with a communications network, comprising:
 - a switch configured to control a supply of power to a rechargeable battery;
 - a controller configured to receive USB power from an external source and supply power to the portable electronic device; and
 - a sensing circuit configured to determine power supplied to the portable electronic device,*the controller responsive to the sensing circuit and configured to control the switch to limit battery charging from the external source such that sufficient power is provided for operation of the portable electronic device.
10. The portable electronic device of claim 9, wherein the controller is configured to control the switch in response to *the voltage drop* to provide sufficient power for operation of the device.

In some cases, antecedent basis can be implicit. *See Energizer Holdings Inc. v. Int’l Trade Comm’n*, 435 F.3d 1366, 1371 (Fed. Cir. 2006) (holding that “an anode gel comprised of zinc as the active anode component” provided implicit antecedent basis for “said zinc anode”); *see also Cross. Med. Prods., Inc. v. Medtronic Sofamor Danek, Inc.*, 424 F.3d 1293, 1319 (Fed. Cir. 2005); *Bose Corp. v. JBL, Inc.*, 274 F.3d 1354, 1359 (Fed. Cir. 2001); *Ex Parte Porter*, 25 U.S.P.Q. 2d (BNA) 1144, 1145 (B.P.A.I. 1992) (“The term ‘the controlled fluid’ . . . finds reasonable antecedent basis in the previously recited ‘controlled stream of fluid’”).

This is not such a case. First, Plaintiff has argued that the antecedent basis is implicit in the “sensing circuit” recited in Claim 9, but this “sensing circuit” is recited as “configured to

determine *power* supplied to the portable electronic device” rather than as determining any voltage, let alone any voltage drop.

Second, Plaintiff has urged that the meaning of the claims is sufficiently clear in light of disclosures in the specification. *See In re Skvorecz*, 580 F.3d 1262, 1268–69 (Fed. Cir. 2009) (finding that the phrase “at the separation” “d[id] not require further antecedent basis” because “a person skilled in the field of the invention would understand the claim when viewed in the context of the specification”). The disclosures cited by Plaintiff, however, do not demonstrate how “determin[ing] power” necessarily requires determining a voltage drop or any particular voltage drop. *See* ’319 Patent at 5:37–42 (“voltage sensing circuit 30”), 5:55–64 (“voltage drop”), 8:13–19 (“voltage sensing portion of this circuit”), 8:34–36 & 10:18-25; *see also* Dkt. No. 106, Ex. 39, Dec. 19, 2017 Wei Decl. at ¶¶ 97–98 & 100. Instead, this is a specific feature of particular disclosed embodiments that should not be imported into the claims. *See Phillips*, 415 F.3d at 1323.

Finally, the opinion of Plaintiff’s expert is likewise unpersuasive in this regard. *See* Dkt. No. 102, Ex. 13, Dec. 5, 2017 Fernald Decl. at ¶¶ 182–84.

Claims 18 and 19 of the ’983 Patent are similar to above-discussed Claims 9 and 10, respectively. Substantially the same analysis also applies to “the *voltage* sensing circuit” recited in Claims 7, 8, and 15–17 of the ’983 Patent. Claims 7 and 8 each depend from Claim 1, and Claims 15–17 each depend from Claim 9. Claims 1 and 9 each recite “a sensing circuit configured to determine *power* supplied to the portable electronic device,” not voltage. The Court therefore finds that all of the claims here at issue are indefinite because of lack of antecedent basis. *See Halliburton Energy Servs., Inc. v. M-I LLC*, 514 F.3d 1244, 1249 (Fed. Cir. 2008) (citing *Energizer*, 435 F.3d at 1370–71).

The Court therefore hereby finds that **“the voltage sensing circuit”** and **“[the controller] is configured to control the switch in response to the voltage drop to provide sufficient power for operation of the device”** lack antecedent basis and, as a result, the Court finds that Claims 7, 8, 10, 15–17, and 19 of the ’983 Patent are **indefinite**.

T. “wherein the supply current passes through the external driving semiconductor rather than through the battery charge controller,” “whereby load current passes through the external driving semiconductor instead of the battery charge controller,” and “whereby load current passes through the external driving semiconductor in lieu of the controller”

<p>“wherein the supply current passes through the external driving semiconductor rather than through the battery charge controller” (’319 Patent, Claim 2)</p> <p>“whereby load current passes through the external driving semiconductor instead of the battery charge controller” (’514 Patent, Claim 2)</p> <p>“whereby load current passes through the external driving semiconductor in lieu of the controller” (’983 Patent, Claims 6 & 14)</p>	
Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
<p>“external driving semiconductor”: “a semiconductor circuit element that is outside the circuitry responsible for managing battery charging and through which current passes under the control of the circuitry responsible for managing battery charging; the remainder of the term requires no additional construction necessary at this time (<i>i.e.</i>, plain and ordinary meaning in light of the intrinsic evidence)</p>	Indefinite

Dkt. No. 102 at 24–25; Dkt. No. 106 at 28; Dkt. No. 121 at A2-5.

Shortly before the start of the January 23, 2018 hearing, the Court provided the parties with the following preliminary construction: “Indefinite.”

(1) The Parties' Positions

Plaintiff argues that “[a] POSA [(person of ordinary skill in the art)] would understand from the specification that when claim 1 requires that the battery charge controller ‘receive power’ from an external power source and then limit the power provided to the device and battery, there is no requirement that electrons literally flow through the controller, only that the electrons should flow through a pass element (*e.g.*, a driving semiconductor) regulated by the controller.” Dkt. No. 102 at 25.

Defendants respond that the claims at issue are internally inconsistent because they recite controllers that *both* themselves receive and dissipate power *and* use an external driving element to do so. Dkt. No. 106 at 28.

(2) Analysis

Claims 1 and 2 of the '319 Patent, for example, recite (emphasis added):

1. A battery charging circuit, comprising:

a semiconductor switch having an output connected to a rechargeable battery and configurable to isolate the rechargeable battery from a portable device;

a battery charge controller configured to receive power from an external universal serial bus (USB) port, and supply output power to the portable device having at least one function unrelated to the battery charge controller and to the rechargeable battery through the switch;

the battery charge controller being further configured to limit the output power such that the portable device and the rechargeable battery may not draw more than a pre-determined maximum current available from the USB port; and

a voltage sensing circuit configured to measure a voltage drop across the battery charge controller, and respond to the voltage drop across the battery charge controller by modulating the switch to control an amount of current supplied to the rechargeable battery such that the portable device receives a predetermined amount of power needed to operate and the rechargeable battery receives a remainder of the power available from the battery charge controller.

2. The battery charging circuit of claim 1, further comprising:

an external driving semiconductor controlled by the battery charge controller and operable to carry supply current from the USB port to the portable device and the rechargeable battery, *wherein the supply current passes through*

the external driving semiconductor rather than through the battery charge controller.

Thus, whereas independent Claim 1 of the '319 Patent recites that power passes through the battery charge controller, dependent Claim 2 (which, as a dependent claim, includes all of the limitations of the independent claim) recites also that power does *not* pass through the battery charge controller. Plaintiff argues that Claim 1 is broad enough to cover either providing current through the controller itself or “controlling” an external driving semiconductor to provide the current. Dkt. No. 102 at 24.

Yet, this limitation in Claim 1 recites “receive” and “supply,” not control. The disclosures cited by Plaintiff, regarding a battery charge controller “provid[ing]” current through an external driving element (*see* '319 Patent at 7:49–59 & 8:40–48), do not compel finding otherwise. Also of note, some claims expressly recite “control” or “controlled,” such as above-reproduced Claim 1, which weighs against Plaintiff’s suggestion that “receive” and “supply” encompass merely controlling. *See also* '319 Patent at Cls. 2 & 20; '983 Patent at Cls. 9 & 22; *see, e.g., CAE Screenplates, Inc. v. Heinrich Fiedler GmbH & Co. KG*, 224 F.3d 1308, 1317 (Fed. Cir. 2000) (“In the absence of any evidence to the contrary, we must presume that the use of these different terms in the claims connotes different meanings.”); *Tandon Corp. v. U.S. Int’l Trade Comm’n*, 831 F.2d 1017, 1023 (Fed. Cir. 1987) (“There is presumed to be a difference in meaning and scope when different words or phrases are used in separate claims.”).

Claim 2 of the '319 Patent is therefore internally inconsistent and, as a result, is indefinite. *See Competitive Techs., Inc. v. Fujitsu Ltd.*, 185 F. App’x 958, 965–66 (Fed. Cir. June 15, 2006). The same analysis applies to Claim 2 of the '514 Patent and Claims 6 and 14 of the '983 Patent.

The Court thus finds that the terms **“wherein the supply current passes through the external driving semiconductor rather than through the battery charge controller,”** **“whereby load current passes through the external driving semiconductor instead of the battery charge controller,”** and **“whereby load current passes through the external driving semiconductor in lieu of the controller”** render Claim 2 of the ’319 Patent, Claim 2 of the ’514 Patent, and Claims 6 and 14 of the ’983 Patent **indefinite**.

U. “USB,” “USB power,” “USB power supply,” and “non-USB source”

<p align="center">“USB” (’319 Patent, All Claims; ’514 Patent, Claim 7; ’983 Patent, All Claims)</p>	
Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
<p>USB should only be construed as part of the term in which it appears.</p> <p>USB means Universal Serial Bus. [A] Universal Serial Bus is a type of serial bus. A serial bus is a communication channel across which data, if transmitted, is transmitted one bit at a time.</p>	<p>“USB is an abbreviation for ‘Universal Serial Bus,’ which is a computer standard technology described in Universal Serial Bus Specification Revision 2.0 and the prior versions of this standard, at the time of the claimed invention”</p>
<p align="center">“USB power” (’983 Patent, Claims 1–21)</p>	
Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
<p>“power sourced from a USB port”</p>	<p>No construction necessary outside of “USB.”</p> <p>Alternatively: “power specified in USB [at the time of the claimed invention]”</p>

“a USB power supply” (’983 Patent, Claim 22)	
Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
“power sourced from a USB port”	No construction necessary outside of “USB.” Alternatively: “power supply specified in USB [at the time of the claimed invention]”
“non-USB source” (’319 Patent, Claims 15–19)	
Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
“power from a source that is not a USB port”	No construction necessary outside of “USB.” Alternatively: “source not specified in USB”

Dkt. No. 81, Ex. A2 at 21–22; Dkt. No. 102 at 25; Dkt. No. 106 at 17; Dkt. No. 121 at A2-2.

Shortly before the start of the January 23, 2018 hearing, the Court provided the parties with the following preliminary constructions: “USB” has the “Same construction as in the ’936 Patent Family”; and “USB power,” “a USB power supply,” and “non-USB source” have “Plain meaning (in light of the Court’s construction of ‘USB,’ above).”

(1) The Parties’ Positions

Plaintiff submits that whereas “[Defendants] attempt[] to incorporate unspecified portions of the USB Specification Revision 2.0 as of February 21, 2003 into the patent,” “[t]his makes no sense[] because the specification states explicitly what these terms mean.” Dkt. No. 102 at 25.

Defendants respond:

Because [Plaintiff’s] construction has no temporal limitation, it would expand with each new USB power specification release to encompass these new types

and amounts of USB power. This is impermissible. *Kopykake Enters., Inc. v. Lucks Co.*, 264 F.3d 1377, 1383 (Fed. Cir. 2001) (when term with narrow meaning later acquires broader definition, its scope is limited to what it meant at the time of filing);

Dkt. No. 106 at 18.

Plaintiff replies that “[t]he claims do not recite ‘*standard* USB power’ and do not recite any particular level of power.” Dkt. No. 114 at 10. Plaintiff further argues:

Likewise, “USB-compliant” is not “the *raison d’etre* of the claimed [circuit]” in the ’173 and ’655 patents; indeed the term “USB-compliant” does not appear at all in ’173, claim 6 and ’655, claim 8, even though they recite the same class of circuits as ’173, claim 1 and ’655, claim 3. What makes the circuits “USB-complaint” [*sic*] is that they ensure that enough power is provided to the device so that it can communicate over D+ and D-. Dkt. 102-10, 6:15–31. And the relevant feature that achieves this effect is recited in the claim itself. *E.g.*, ’173, claim 1 (*e.g.*, “battery isolation circuitry” and “whereby” clause).

Id.

(2) Analysis

Substantially the same analysis applies to the “USB” terms here as is discussed above as to the ’936 Patent Family. *See* ’319 Patent at 2:13 (“the standard USB specification”) & 2:59 (“the USB standard is widely accepted”); *see also id.* at 3:59–63 (“There is therefore a need for a method and apparatus which allows standard computer data busses such as USB ports to simultaneously power portable devices 18 and their associated battery charge circuits 20 without having to design new battery charge controllers with very specific applications.”).

The Court thus hereby construes the disputed terms as set forth in the following chart:⁷

⁷ The parties’ January 5, 2018 Joint Claim Construction Chart Pursuant to Patent Rule 4-5(d) also includes, as to the ’319 Patent, the term “a Universal Serial Bus (USB) port” (Dkt. No. 121 at A2-2), but this term was not presented as to the ’319 Patent in the parties’ briefing. To whatever extent the parties are disputing the meaning of “a Universal Serial Bus (USB) port” in the ’319 Patent, the Court hereby construes that term to have its plain meaning (in light of the Court’s construction of “USB”).

<u>Term</u>	<u>Construction</u>
“USB”	“Universal Serial Bus as described in Universal Serial Bus Specification Revision 2.0 and related versions of this standard at the time of the claimed invention”
“USB power,” “a USB power supply,” and “non-USB source”	Plain meaning (in light of the Court’s construction of “USB,” above)

V. “means for receiving power from the USB port”

Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
Function: “receiving power from the USB port” Structure: “battery charge controller; and the equivalents thereof”	Function: “receiving power from the USB port” Structure: “NCP1800 battery charge controller or Texas Instruments bq24020 Lithium Ion battery charge controller, and equivalents thereof”

Dkt. No. 102 at 25; Dkt. No. 106 at 29; Dkt. No. 121 at A2-6. The parties submit that this term appears in Claim 20 of the ’319 Patent. *Id.*

Shortly before the start of the January 23, 2018 hearing, the Court provided the parties with the following preliminary construction: “Function: ‘receiving power from the USB port’ / Structure: ‘battery charge controller 20, and equivalents thereof.’”

(1) The Parties’ Positions

Plaintiff argues: “[Defendants] want to limit the associated structure to the two battery charge controllers used in Figs. 6 and 7. But the embodiment in Figure 4 teaches the use of a ‘battery charge controller 20’ and the construction must reflect this. Ex. 13, ¶ 187; Ex. 6, 3:51, 4:1–12, 5:25–35[,], 1:22–35, 3:59–63.” Dkt. No. 102 at 25–26.

Defendants respond:

The black box “battery charge controller 20” is not sufficient structure to receive power from a USB port. *Biomedino v. Waters Tech. Corp.*, 490 F.3d 946, 949–950, 952 (Fed. Cir. 2007) (finding mere box labeled “Control” inadequate disclosure of structure). Many battery charge controllers are not designed to operate from a USB source with USB power. Ex. 39 ¶ 103. Structure must be limited to the disclosed controllers that can actually receive power from a USB port: NCP1800 and bq24020. 7:49–8:12, 9:65–67; Ex. 39 ¶ 101.

Dkt. No. 106 at 29.

(2) Analysis

Defendants’ above-noted “black box” argument is at odds with Defendants’ argument as to the term “battery charge controller,” which has been presented as a disputed claim term and which is addressed above. As to that term, Defendants have argued that “[b]attery charger controllers are devices well understood to POSAs.” Dkt. No. 106 at 20. The Court therefore rejects Defendants’ argument here that “battery charge controller 20” is not sufficiently structural to be corresponding structure. Defendants also argue that “battery charge controller 20” cannot be corresponding structure because not all battery charge controllers can receive power from a USB port, but this argument is unavailing. By analogy, surely the word “screwdriver” is structural even though not all screwdrivers can drive all types of screws. *Cf. Greenberg v. Ethicon Endo-Surgery, Inc.*, 91 F.3d 1580, 1583 (Fed. Cir. 1996) (“It is true that the term ‘detent’ does not call to mind a single well-defined structure, but the same could be said of other commonplace structural terms such as ‘clamp’ or ‘container.’ What is important is not simply that a ‘detent’ or ‘detent mechanism’ is defined in terms of what it does, but that the term, as the name for structure, has a reasonably well understood meaning in the art.”); *id.* (“Many devices take their names from the functions they perform. The examples are innumerable, such as ‘filter,’ ‘brake,’ ‘clamp,’ ‘screwdriver,’ or ‘lock.’”).

The Court therefore hereby finds that **“means for receiving power from the USB port”** is a means-plus-function term, the claimed function is **“receiving power from the USB port,”** and the corresponding structure is **“battery charge controller 20, and equivalents thereof.”**

W. “means for supplying the received power to the rechargeable battery and to the portable device, wherein the supplied power is limited such that the rechargeable battery and the portable device may not draw more than a pre-determined maximum amount of current available from the USB port”

Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
<p>Function: “supplying the received power to the rechargeable battery and to the portable device, wherein the supplied power is limited such that the rechargeable battery and the portable device may not draw more than a pre-determined maximum amount of current available from the USB port”</p> <p>Structure: “a battery charge controller in coordination with hardware such as a resistor to ground, a battery charge controller receiving programmable current limits, programmable devices such as digital signal processors (DSPs), micro-controller (including microcontroller with an DAC that can control battery charge controller current output), field programmable gate arrays (FPGAs), application specific integrated circuits (ASICs) and the like with programmed instructions that control current output level of battery charge controller embodied as sets of executable machine code stored as object or source code, integrated with the code of other programs, implemented as subroutines, by external program calls or HDLs; and equivalents”</p>	<p>Function: “supplying the received power to the rechargeable battery and to the portable device, wherein the supplied power is limited such that the rechargeable battery and the portable device may not draw more than a pre-determined maximum amount of current available from the USB port”</p> <p>Structure: “NCP1800 battery charge controller or Texas Instruments bq24020 Lithium Ion battery charge controller in coordination with resistors R2, R3, and R4 between ISEL and ground, and equivalents thereof”</p>

Dkt. No. 102 at 26; Dkt. No. 106 at 29; Dkt. No. 121 at A2-6–A2-7. The parties submit that this term appears in Claim 20 of the ’319 Patent. *Id.*

Shortly before the start of the January 23, 2018 hearing, the Court provided the parties with the following preliminary construction: “Function: ‘supplying the received power to the rechargeable battery and to the portable device, wherein the supplied power is limited such that the rechargeable battery and the portable device may not draw more than a pre-determined maximum amount of current available from the USB port’ / Structure: ‘battery charge controller 20, and equivalents thereof.’”

(1) The Parties’ Positions

Plaintiff argues: “[Plaintiff’s] construction matches the relevant structures identified in the specification while [Defendants] ignore at least disclosures connected with Figures 4, 7 and 8. Ex. 13, ¶¶ 188–191; Ex. 6, 5:48–54 & Fig. 4; 10:2–3; 10:66–11:23; 13:15–20 & 13:36–40; 13:61–67.” Dkt. No. 102 at 26.

Defendants respond: “[Defendants’] construction identifies the disclosed structure capable of performing this function, while FISI improperly identifies boilerplate amounting to ‘hardware and/or software,’ neither linked to the function nor sufficient to perform it.” 7:49–8:12, 9:65–67; Ex. 39 ¶¶ 105–06.” Dkt. No. 106 at 29.

(2) Analysis

The specification discloses:

In the exemplary embodiments described hereinafter, for example, the maximum current output of *battery charge controller 20* is simply set via an external resistor R1, though of course, the current output could also be controlled in many other ways (for example, being programmable, application specific, or set via some form of analogue or digital input signal).

’319 Patent at 5:48–54 (emphasis added).

For the same reasons discussed above as to “means for receiving power from the USB port,” “battery charge controller 20” has structural meaning such that the corresponding structure should not be limited to the specific example controllers proposed by Defendants.

The Court therefore hereby finds that **“means for supplying the received power to the rechargeable battery and to the portable device, wherein the supplied power is limited such that the rechargeable battery and the portable device may not draw more than a pre-determined maximum amount of current available from the USB port”** is a means-plus-function term, the claimed function is **“supplying the received power to the rechargeable battery and to the portable device, wherein the supplied power is limited such that the rechargeable battery and the portable device may not draw more than a pre-determined maximum amount of current available from the USB port,”** and the corresponding structure is **“battery charge controller 20, and equivalents thereof.”**

X. “means for both isolating the rechargeable battery from the portable device and controlling an amount of current supplied to the rechargeable battery such that the portable device receives a pre-determined amount of the received power needed to operate and the rechargeable battery receives a remainder of the received power”

Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
<p>Function: “isolating the rechargeable battery from the portable device and controlling an amount of current supplied to the rechargeable battery such that the portable device receives a pre-determined amount of the received power needed to operate and the rechargeable battery receives a remainder of the received power”</p> <p>Structure: “a switch under control of a voltage sensing circuit which may include an op amp or a comparator; a programmable device such as a DSP, an FPGA, a microcontroller with integral ADCs or an ASCI that has programmed instructions that can measure voltage drop across battery charge controller and respond to such drop by modulating semiconductor switch to reduce current to rechargeable battery when voltage drop is too great, where the programmable instructions are embodied as sets of executable machine code stored as object or source code, integrated with the code of other programs, implemented as subroutines, by external program calls or HDLs; and equivalents”</p>	<p>Function: “both isolating the rechargeable battery from the portable device and controlling an amount of current supplied to the rechargeable battery such that the portable device receives a pre-determined amount of the received power needed to operate and the rechargeable battery receives a remainder of the received power”</p> <p>Structure: Indefinite</p>

Dkt. No. 102 at 26; Dkt. No. 106 at 29; Dkt. No. 121 at A2-8–A2-9. The parties submit that this term appears in Claim 20 of the ’319 Patent.

Shortly before the start of the January 23, 2018 hearing, the Court provided the parties with the following preliminary construction: “Function: ‘both isolating the rechargeable battery from the portable device and controlling an amount of current supplied to the rechargeable battery such that the portable device receives a pre-determined amount of the received power

needed to operate and the rechargeable battery receives a remainder of the received power' /

Structure: 'battery charge controller 20 and voltage sensing circuit 30; and equivalents thereof.'"

(1) The Parties' Positions

Plaintiff argues: "[Defendants] assert[] that the limitation is indefinite, but the structure associated with this claim is expressly described in '319 patent at Figures 4–8, 5:34–6:8, 7:20–31, 7:53–55, 8:13–36, 10:18–24, 12:52–13:5, 13:15–22, 13:41–67; Ex. 52 at originally filed claims 1, 3, 4, 5 & 10; Tutorial [(Dkt. No. 101-1)] Slides # 42, 63–64, 68–69; Ex. 13, ¶¶ 193–194 (ensuring the portable of a minimum system voltage also assures it of a predetermined amount of received power needed to operate), ¶ 195 (explaining 'a remainder')." Dkt. No. 102 at 26.

Defendants respond that "[n]o disclosed structure ensures a predetermined amount of power needed to operate." Dkt. No. 106 at 30.

At the January 23, 2018 hearing, the parties presented oral argument regarding this disputed term.

(2) Analysis

The disclosed "voltage sensing circuit 30" and "switch Q1" can isolate the rechargeable battery and "ensure that the portable device 18 receives the power it requires for operation":

A circuit which overcomes a number of the problems in the art, is presented as a block diagram in FIG. 4. This figure presents a battery charging circuit built around a standard battery charge controller 20. In this embodiment of the invention, the battery charge controller 20 receives power from an external source (V_{BUS}) and feeds a portable device 18 and rechargeable battery or batteries 24 in parallel, but *the feed to the battery 24 is made via a semiconductor switch Q1*. Control of the current flow through the semiconductor switch Q1 is modulated by a *voltage sensing circuit 30 which measures the voltage drop across the battery charge controller 20 and reduces the current flow through the semiconductor switch Q1 to the battery 24 when the voltage drop is too great*.

The voltage sensing circuit 30 allows the total power consumption of the circuit to be inferred because the current output of the battery charge controller 20 is controllable, and power is the product of voltage drop and current. Most battery charge controllers 20 known in the art are provided with some sort of maximum current control. In the exemplary embodiments described hereinafter, for example, the maximum current output of battery charge controller 20 is simply set via an external resistor R1, though of course, the current output could also be controlled in many other ways (for example, being programmable, application specific, or set via some form of analogue or digital input signal).

Also in the embodiments described hereinafter, the voltage sensing circuit 30 itself is provided via an operational amplifier (op amp). Thus, the voltage drop across the battery charge controller 20 could simply be measured by comparing the voltage at the input and output of the battery charge controller 20, as shown in FIG. 4. Alternatively, one input to the op amp could be taken from the output of the battery charge controller 20, while the other could be some reference voltage V_{REF} ; either emulating the V_{BUS} input to the battery charge controller 20, or being scaled in some manner.

Thus, by monitoring the voltage drop across the battery charge controller 20 and knowing the maximum current that it may provide, the total power is known. Using this information to modulate the power to the battery 24, the total power dissipated by the battery charge controller 20 may be controlled.

Also, because this circuit modulates the power available to the battery 24, this circuit can be designed to *ensure that the portable device 18 receives the power it requires for operation*, while the rechargeable battery 24 only receives power when surplus capacity is available.

* * *

This circuit also allows the user to boot his portable device 18 very quickly because it isolates the battery 24 from the portable device 18. If the battery 24 and portable device 18 were connected when the battery charge controller 20 attempted to condition a deep discharged battery 24, the voltage at the portable device 18 would be drawn down to the level of the deep-discharged battery 24. Typically, this would be too low for proper operation of the portable device 18. With the circuit of the invention, the battery 24 and portable device 18 are isolated by Q1. Even if the battery 24 is in a deep-discharge state, the portable device 18 will still see a voltage that is high enough for proper operation.

'319 Patent at 5:30–6:8 & 7:20–31 (emphasis added).

Defendants have argued that these disclosures do not relate to ensuring that a portable device receives any particular amount of power, let alone a “pre-determined” amount. Plaintiff’s

expert has opined, however, that a person of ordinary skill in the art would understand “pre-determined” in the context of the claim language and the written description as referring to an amount of power needed for proper operation. *See* Dkt. No. 102, Ex. 13, Dec. 5, 2017 Fernald Decl. at ¶¶ 193–94 (citing ’319 Patent at 3:33–40 & 7:27–31). The opinion of Plaintiff’s expert is persuasive in this regard. *See Teva*, 135 S. Ct. at 841.

Finally, at the January 23, 2018 hearing, Plaintiff urged that the corresponding structure should include not only Q1 but also, as alternatives, Q3 and Q908. *See, e.g.*, ’319 Patent at 7:49–55 (“MOSFET Q3”) & 10:18–20 (“MOSFET Q908”). On balance, the switch Q1 is the structure “clearly link[ed] or associate[d]” with the claimed function. *Med. Instrumentation*, 344 F.3d at 1219 (citation and internal quotation marks omitted).

The Court therefore hereby finds that **“means for both isolating the rechargeable battery from the portable device and controlling an amount of current supplied to the rechargeable battery such that the portable device receives a pre-determined amount of the received power needed to operate and the rechargeable battery receives a remainder of the received power”** is a means-plus-function term, the claimed function is **“both isolating the rechargeable battery from the portable device and controlling an amount of current supplied to the rechargeable battery such that the portable device receives a pre-determined amount of the received power needed to operate and the rechargeable battery receives a remainder of the received power,”** and the corresponding structure is **“switch Q1 and voltage sensing circuit 30; and equivalents thereof.”**

Y. “means for measuring a voltage drop across a battery charge controller providing power to a portable device and an input of a switch in parallel”

Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
Function: “measuring a voltage drop across a battery charge controller providing power to a portable device and an input of a switch in parallel” Structure: “a voltage sensing circuit that may include an op amp and voltage divider or a programmable device such as an FGPG, an ASIC, a DSP and a microcontroller with integral ADCs that has programmed instructions that can measure voltage drop across battery charge controller, where the programmable instructions are embodied as sets of executable machine code stored as object or source code, integrated with the code of other programs, implemented as subroutines, by external program calls or HDLs; and equivalents”	Function: “measuring a voltage drop across a battery charge controller providing power to a portable device and an input of a switch in parallel” Structure: “Fig. 6: op amp 52, resistors R5 and R6, and capacitor C1, and equivalents thereof”

Dkt. No. 102 at 26–27; Dkt. No. 106 at 30; Dkt. No. 121 at A2-9–A2-10. The parties submit that this term appears in Claim 20 of the ’514 Patent. *Id.*

Shortly before the start of the January 23, 2018 hearing, the Court provided the parties with the following preliminary construction: “Function: ‘measuring a voltage drop across a battery charge controller providing power to a portable device and an input of a switch in parallel’ / Structure: ‘voltage sensing circuit 30, and equivalents thereof.’”

(1) The Parties’ Positions

Plaintiff argues: “[Defendants] ignore[] the express structure recited in Figs. 4, 7 and 8 and improperly include[] capacitor C1 as part of the identified structure for Figure 6. Ex. 13,

¶¶ 196–198; Ex. 6 [’319], 5:33–42, 5:55–64, 8:13–28, 10:18–24, 12:52–13:5, 13:15–22, 13:41–45, 13:60–14:5; Ex. 52, claims 1, 3, 4, 5 & 10.” Dkt. No. 102 at 27.

Defendants respond:

FISI’s construction contains a broad boilerplate recitation not linked to the claimed function and not sufficient to perform it. Samsung’s structure properly excludes Figs. 4, 7, and 8, because the Fig. 4 voltage sensing circuit is a black box; Fig. 7 does not measure a voltage drop across the battery charge controller; and Fig. 8 is a flowchart, not structure. Ex. 39 ¶¶ 113–15. *In re Aoyama*, 656 F.3d 1293, 1297–98 (Fed. Cir. 2011) (flowchart of boxes insufficient structure).

Dkt. No. 106 at 30.

(2) Analysis

Defendants have cited the embodiment disclosed in Figure 6 and the accompanying written description. *See* ’319 Patent at 7:49–8:36. But whereas the claimed function recites “measuring a voltage drop *across* a battery charge controller,” the Figure 6 embodiment uses “V_{REF}” rather than the battery charge controller input voltage. Defendants have not demonstrated that the written description “clearly links or associates that structure to the function recited in the claim.” *Med. Instrumentation*, 344 F.3d at 1219 (citation and internal quotation marks omitted).

Instead, the written description refers to “voltage sensing circuit 30” as “measuring a voltage drop across a battery charge controller”:

A circuit which overcomes a number of the problems in the art, is presented as a block diagram in FIG. 4. This figure presents a battery charging circuit built around a standard battery charge controller 20. In this embodiment of the invention, the battery charge controller 20 receives power from an external source (V_{BUS}) and feeds a portable device 18 and rechargeable battery or batteries 24 in parallel, but the feed to the battery 24 is made via a semiconductor switch Q1. Control of the current flow through the semiconductor switch Q1 is modulated by a *voltage sensing circuit 30 which measures the voltage drop across the battery charge controller 20* and reduces the current flow through the semiconductor switch Q1 to the battery 24 when the voltage drop is too great.

'319 Patent at 5:30–42 (emphasis added); cf. *Linear Tech. Corp. v. Impala Linear Corp.*, 379 F.3d 1311, 1320 (Fed. Cir. 2004) (“when the structure-connoting term ‘circuit’ is coupled with a description of the circuit’s operation, sufficient structural meaning generally will be conveyed to persons of ordinary skill in the art . . .”; noting “language reciting [the circuits’] respective objectives or operations”); *Apex Inc. v. Raritan Computer, Inc.*, 325 F.3d 1364, 1372 (Fed. Cir. 2003) (“While we do not find it necessary to hold that the term ‘circuit’ by itself always connotes sufficient structure, the term ‘circuit’ with an appropriate identifier such as ‘interface,’ ‘programming’ and ‘logic,’ certainly identifies some structural meaning to one of ordinary skill in the art.”).⁸

The Court therefore hereby finds that **“means for measuring a voltage drop across a battery charge controller providing power to a portable device and an input of a switch in parallel”** is a means-plus-function term, the claimed function is **“measuring a voltage drop across a battery charge controller providing power to a portable device and an input of a switch in parallel,”** and the corresponding structure is **“voltage sensing circuit 30, and equivalents thereof.”**

⁸ Alternatively, even if “voltage sensing circuit 30” were found to be inadequate structure, the written description further discloses that the voltage sensing circuit can be implemented as an “operational amplifier,” which Defendants themselves here propose as structure. *See id.* at 5:55–57; *see also id.* at 5:30–6:8.

Z. “means for responding to the voltage drop across the battery charge controller by modulating the switch to control a quantity of current supplied to a rechargeable battery such that the portable device receives a predetermined amount of power to operate and the rechargeable battery receives a remainder of power available from the battery charge controller”

Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
<p>Function: “responding to the voltage drop across the battery charge controller by modulating the switch to control a quantity of current supplied to a rechargeable battery such that the portable device receives a predetermined amount of power to operate and the rechargeable battery receives a remainder of power available from the battery charge controller”</p> <p>Structure: “a voltage sensing circuit that may include an op amp and voltage divider or a programmable device such as an FGPG, an ASIC, a DSP and a microcontroller with integral ADCs that has programmed instructions that can measure voltage drop across battery charge controller, where the programmable instructions are embodied as sets of executable machine code stored as object or source code, integrated with the code of other programs, implemented as subroutines, by external program calls or HDLs; and equivalents”</p>	<p>Function: “responding to the voltage drop across the battery charge controller by modulating the switch to control a quantity of current supplied to a rechargeable battery such that the portable device receives a predetermined amount of power to operate and the rechargeable battery receives a remainder of power available from the battery charge controller”</p> <p>Structure: Indefinite</p>

Dkt. No. 102 at 27; Dkt. No. 106 at 29–30; Dkt. No. 121 at A2-10–A2-11. The parties submit that this term appears in Claim 20 of the ’514 Patent. *Id.*

Shortly before the start of the January 23, 2018 hearing, the Court provided the parties with the following preliminary construction: “Function: ‘responding to the voltage drop across the battery charge controller by modulating the switch to control a quantity of current supplied to a rechargeable battery such that the portable device receives a predetermined amount of power to

operate and the rechargeable battery receives a remainder of power available from the battery charge controller’ / Structure: ‘voltage sensing circuit 30, and equivalents thereof.’”

(1) The Parties’ Positions

Plaintiff argues: “The structure associated with this claim is expressly described in ’319 patent at Figures 4–8, 5:34–6:8, 7:20–31, 7:53–55, 8:13–36, 10:18–24, 12:52–13:5, 13:15–22, 13:41–67, and originally filed claims 1, 3, 4, 5 & 10. *See* Ex. 13, ¶¶ 193–194, 200.” Dkt. No. 102 at 27.

Defendants respond that “[n]o disclosed structure ensures a predetermined amount of power needed to operate.” Dkt. No. 106 at 30.

(2) Analysis

This term presents substantially the same dispute as the “means for both isolating . . . and controlling . . .” term addressed above. The Court therefore reaches the same conclusions for substantially the same reasons. *See* ’514 Patent at 5:44–49; *see also* Dkt. No. 102, Ex. 13, Dec. 5, 2017 Fernald Decl. at ¶¶ 193–94 (citing ’319 Patent at 3:33–40 & 7:27–31); *see also* ’514 Patent at 3:37–44 & 7:34–38.

The Court accordingly hereby finds that **“means for responding to the voltage drop across the battery charge controller by modulating the switch to control a quantity of current supplied to a rechargeable battery such that the portable device receives a predetermined amount of power to operate and the rechargeable battery receives a remainder of power available from the battery charge controller”** is a means-plus-function term, the claimed function is **“responding to the voltage drop across the battery charge controller by modulating the switch to control a quantity of current supplied to a rechargeable battery such that the portable device receives a predetermined amount of**

power to operate and the rechargeable battery receives a remainder of power available from the battery charge controller,” and the corresponding structure is “voltage sensing circuit 30, and equivalents thereof.”

VII. CONSTRUCTION OF DISPUTED TERMS IN THE '173 PATENT FAMILY

AA. “USB”

Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
USB should only be construed as part of the term in which it appears; USB means Universal Serial Bus. a Universal Serial Bus is a type of serial bus. A serial bus is a communication channel across which data, if transmitted, is transmitted one bit at a time transmitted one bit at a time [<i>sic</i>].	USB is an abbreviation for ‘Universal Serial Bus,’ which is a computer standard technology described in Universal Serial Bus Specification Revision 2.0 and the prior versions of this standard, at the time of the claimed invention.

Dkt. No. 121 at A3-1. The parties submit that this term appears in Claim 1 of the '173 Patent and dependent claims as well as Claim 3 of the '655 Patent and dependent claims. *Id.*

Shortly before the start of the January 23, 2018 hearing, the Court provided the parties with the following preliminary construction: “Same construction as in the '936 Patent Family.”

(1) The Parties’ Positions

Defendants have presented this term in the '173 Patent Family together with the same term in the '319 Patent Family, addressed above. *See* Dkt. No. 106 at 17–18.

(2) Analysis

Substantially the same analysis applies to the “USB” term here as discussed above as to the '936 Patent Family. *See* '514 Patent at 2:20 (“[t]he standard USB specification”) & 2:64 (“the USB standard is widely accepted”); *see also id.* at 3:63–67.

The Court therefore hereby construes **“USB”** in the ’173 Patent Family to mean **“Universal Serial Bus as described in Universal Serial Bus Specification Revision 2.0 and related versions of this standard at the time of the claimed invention.”**

BB. “A USB-compliant charging and power supply circuit comprising”

Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
Not a limit; but if a limit, and if a construction is necessary, “USB-compliant” means “permitting the electronic system to talk over USB”	Limiting. No construction necessary outside of “USB.”

Dkt. No. 102 at 27; Dkt. No. 106 at 18; Dkt. No. 121 at A3-1. The parties submit that this term appears in Claim 1 of the ’173 Patent and dependent claims as well as Claim 3 of the ’655 Patent and dependent claims. *Id.*

Shortly before the start of the January 23, 2018 hearing, the Court provided the parties with the following preliminary construction: “Not limiting.”

(1) The Parties’ Positions

Plaintiff argues that this preamble term is not limiting because “[t]he quality of ‘USB compliant’ is never referenced in the body of the claims, it was not relied on during prosecution, and the structure of the claim [*sic*] circuit is not at all ‘affecte[d]’ by deleting the phrase.” Dkt. No. 102 at 28 (quoting *Am. Med. Sys., Inc. v. Biolitec, Inc.*, 618 F.3d 1354, 1358–59 (Fed. Cir. 2010)). Alternatively, Plaintiff argues that “[i]f the claim term is limiting, the specification expressly defines what it means.” Dkt. No. 102 at 28.

Defendants respond that “‘USB-compliant’ is limiting because it is ‘the raison d’être of the claimed [circuit] itself.’” Dkt. No. 106 at 18 (quoting *Boehringer, Inc. v. Schering-Plough Corp.*, 320 F.3d 1339, 1345 (Fed. Cir. 2003) (alteration Defendants’); citing ’173 Patent at 6:15–31). Defendants also argue that “while ‘permitting . . . talk[ing] over USB’ is one aspect of USB

compliance, no POSA would think the patentee redefined ‘USB-compliant’ to *equate* the two.” *Id.* at 18. Further, Defendants reiterate that “while standards can change, the meaning of claim terms cannot, and ‘USB-compliant’ should therefore be limited to what it meant at the time of the invention.” *Id.* at 19.

(2) Analysis

Claim 1 of the ’173 Patent recites (emphasis added):

1. A *USB-compliant charging and power supply circuit comprising:*
 - switch-mode battery charging circuitry for receiving power from an external power source and for supplying output power, through an output node, to an electronic system of an electronic communication device and to a battery, said switch-mode battery charging circuitry having an integrated circuit and an inductor, said integrated circuit arranged to cooperate with said inductor to provide current of said output power of greater magnitude than current of said power received from said external power source;
 - battery isolation circuitry including a semiconductor switch connecting the output node to said battery, the battery isolation circuitry sensing voltage at said output node and variably restricting current to said battery when said voltage is below a minimum voltage value by operationally controlling said semiconductor switch as current passes through it; and
 - additional circuitry in electrical communication with said battery isolation circuitry for receiving feedback from the electronic system and, in response to the feedback, adjusting the minimum voltage value in relation to requirements of said electronic system;
- whereby during variable current restriction said electronic system is supplied required power with said battery being supplied any additional available power.

Claim 3 of the ’655 Patent recites (emphasis added):

3. A *USB-compliant charging and power supply circuit comprising:*
 - switch-mode battery charging circuitry adapted to:
 - receive external power from an external power source; and
 - supply output power, through an output node, to:
 - an electronic system of an electronic communication device; and
 - a battery, via a switch;
 - said switch-mode battery charging circuitry having an integrated circuit and an inductor, said integrated circuit arranged to cooperate with said inductor to

supply said output power with a current of greater magnitude than current of said external power;

battery isolation circuitry adapted to:

receive a reference voltage from said electronic system;

determine, based on said reference voltage, a minimum voltage value needed at said output node;

sense that a voltage at said output node is below said minimum voltage value; and

control, responsive to said sensing, said switch to restrict current of said output power to said battery, thereby increasing a power allocated to said electronic system.

On one hand, the written description refers to interacting with “USB ports.” *See, e.g.*, ’173 Patent at 1:10–14, 1:26–27 & 6:17–19.

On the other hand, the preamble term “USB-compliant” does not provide antecedent basis for any terms used in the bodies of these claims. Further, the written description discloses “mak[ing] the *example* circuit 112 USB-compliant,” which weighs in favor of interpreting the preambles as merely descriptive of the limitations set forth in the bodies of the claims. *Id.* at 6:16–17 (emphasis added); *see id.* at 6:30–31 (“As a result, the example circuit 112 is USB-compliant.”). Indeed, the written description refers to a computer data bus port 104 that *in one embodiment* is a USB port.” *Id.* at 2:24–26.

On balance, the phrase “USB-compliant” in the preambles is a statement of intended purpose or use rather than a limitation. *See Catalina Mktg.*, 289 F.3d at 808; *see also Pitney Bowes*, 182 F.3d at 1305; *Marrin*, 599 F.3d at 1294–95; *Allen Eng’g*, 299 F.3d at 1346.

The Court accordingly hereby finds that “**A USB-compliant charging and power supply circuit comprising**” is **not limiting**.

CC. “power”

Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
No additional construction necessary at this time (<i>i.e.</i> , plain and ordinary meaning in light of the intrinsic evidence) or “electrical energy supplied from a source”	“product of voltage drop and current”

Dkt. No. 102 at 28; Dkt. No. 106 at 19; Dkt. No. 121 at A3-2. The parties submit that this term appears in all claims of the ’173 Patent and all claims of the ’655 Patent. *Id.*

Shortly before the start of the January 23, 2018 hearing, the Court provided the parties with the following preliminary construction: “Same construction as in the ’319 Patent Family.”

(1) The Parties’ Positions

Plaintiff submits that “[t]he concept of voltage drop is not even disclosed in the ’173 patent family,” and Plaintiff urges that “power should receive a plain and ordinary meaning construction” rather than Defendants’ “idiosyncratic construction of ‘power’ as meaning voltage drop times current.” Dkt. No. 102 at 29.

Defendants argue this term together with the same term in the ’319 Patent Family, addressed above. *See* Dkt. No. 106 at 19–20.

(2) Analysis

Substantially the same analysis applies to “power” here as is discussed above as to the ’319 Patent Family. *See* ’173 Patent at 1:11–14 (“supply charging power”); *see also* Dkt. No. 102, Ex. 61, *Microsoft Computer Dictionary* 352 (4th ed. 1999) (including a definition of “power” as: “In computing, the electricity used to run a computer.”).

The Court therefore hereby construes **“power”** in the ’173 Patent Family to mean **“electricity.”**

DD. “reference voltage”

Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
“a voltage <i>level</i> based on which a voltage of interest is determined”	“a voltage based on which a voltage of interest is determined”

Dkt. No. 102 at 29 (emphasis added); Dkt. No. 106 at 24; Dkt. No. 121 at A3-2 (emphasis added). The parties submit that this term appears in all claims of the ’655 Patent. *Id.*

Shortly before the start of the January 23, 2018 hearing, the Court provided the parties with the following preliminary construction: “a voltage level based on which a voltage of interest is determined.”

(1) The Parties’ Positions

Plaintiff argues that “[t]he ’655 patent makes clear that the recited reference voltage received from an electronic system could be information related to a voltage level (*e.g.*, a representation of the voltage level as digital data).” Dkt. No. 102 at 29. Plaintiff also argues that Defendants’ expert “concedes that voltages can be specified in binary 1 and 0, and that references can be held in a register, which is necessarily a digital form.” *Id.* at 29 (citing *id.*, Ex. 27, Nov. 21, 2017 Wei dep. at 67:10–72:25 & 126:15–25).

Defendants argue this term together with the same term in the ’319 Patents, addressed above. *See* Dkt. No. 106 at 24–26.

At the January 23, 2018 hearing, the parties presented oral argument regarding this disputed term.

(2) Analysis

A different analysis applies to “reference voltage” here than is discussed above as to the ’319 Patent Family because, in the ’655 Patent, the term “reference voltage” is used in a different context. Claim 1 of the ’655 Patent, for example, recites (emphasis added):

1. A power management method for allocating power between a rechargeable battery and an electronic system, said electronic system having a power input and a plurality of modes of operation, the method comprising:
 - generating output power;
 - receiving a reference voltage from said electronic system;*
 - determining, based on said *reference voltage*, a minimum voltage value needed at a node directly connected to said power input of said electronic system;
 - sensing that a voltage at said node is below said minimum voltage value;
 - and
 - restricting, responsive to said sensing, current from said output power to said battery, thereby increasing power allocated to said electronic system.

Because the “reference voltage” is “received” from an electronic system, and because a determination is then made based on the reference voltage, the context of this surrounding claim language demonstrates that “reference voltage” in the claims of the ’655 Patent can be a voltage level, as Plaintiff has proposed, rather than necessarily an actual electrical voltage. *See* ’655 Patent at 7:45–60. The opinions of Plaintiff’s expert are also persuasive in this regard. *See* Dkt. No. 102, Ex. 13, Dec. 5, 2017 Fernald Decl. at ¶¶ 218–19 & 222; *see also Teva*, 135 S. Ct. at 841.

The Court therefore hereby construes **“reference voltage”** in the ’655 Patent to mean **“a voltage level based on which a voltage of interest is determined.”**

EE. “a [semiconductor] switch”

“a switch” (’655 Patent, Claims 3–11)	
Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
“one or more devices or circuits that control conductance between two nodes and that are capable of operating in on, off and non-transient linear modes”	“single switch”

<p align="center">“a semiconductor switch” (’173 Patent, All Claims)</p>	
Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
“switch as defined above that comprises semiconductor material”	“single semiconductor switch”

Dkt. No. 102 at 30; Dkt. No. 106 at 26; Dkt. No. 121 at A3-2. The parties submit that these terms appear in all claims of the ’173 Patent and Claims 3–11 of the ’655 Patent. *Id.*

Shortly before the start of the January 23, 2018 hearing, the Court provided the parties with the following preliminary construction: “Same construction as in the ’319 Patent Family.”

(1) The Parties’ Positions

Plaintiff argues that “[t]here is no support in the intrinsic record to construe ‘a switch’ as ‘a single switch.’” Dkt. No. 102 at 30. Plaintiff further submits that whereas “[Defendants] appear[] to rely on prosecution statements from the ’319 patent to limit the meaning of ‘a switch,’” “[t]he ’319 patent has a completely different specification and belongs to a completely different patent family.” *Id.*

Defendants argue this term in the ’173 Patent Family together with the same term in the ’319 Patent Family, addressed above. *See* Dkt. No. 106 at 26.

(2) Analysis

Substantially the same analysis applies to the “switch” terms here as discussed above as to the ’319 Patent Family. *See* ’173 Patent at 4:34–49; *see also* Dkt. No. 106, Ex. 39, Dec. 19, 2017 Wei Decl. at ¶ 87.

The Court therefore hereby construes **“a switch”** and **“a semiconductor switch”** in the ’173 Patent Family to have their **plain meaning**.

FF. “switch means for shutting off said semiconductor switch if charging is disabled”

Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
Function: “shutting off said semiconductor switch if charging is disabled” Structure: “gate voltage that can turn off the switch, generated by a control circuit; and the equivalents thereof”	Function: “shutting off said semiconductor switch if charging is disabled” Structure: “CH_en signal, FET 236, op-amp 248, FET 252, and equivalents thereof”

Dkt. No. 102 at 30; Dkt. No. 106 at 30; Dkt. No. 121 at A3-2. The parties submit that this term appears in Claim 12 of the ’173 Patent. *Id.*

Shortly before the start of the January 23, 2018 hearing, the Court provided the parties with the following preliminary construction: “Function: ‘shutting off said semiconductor switch if charging is disabled’ / Structure: ‘FET 236 and op-amp 248; and equivalents thereof.’”

(1) The Parties’ Positions

Plaintiff argues that Defendants’ proposal for corresponding structure “is overly inclusive, however, by including within the claim structure the control circuit that generates the gate voltage that shuts off the switch.” Dkt. No. 102 at 30.

Defendants respond:

FISI’s generic identification of “gate voltage” and “control circuit” are so broad as to be non-limiting. FISI recites no switch as structure for “*switch* means.” Samsung’s construction properly recites a switch FET 236 (Fig. 3; 5:8–16, 34–42, 6:40–46) and FET 252, which includes the gate structure responsible for shutting off said semiconductor switch. *Id.*; Ex. 39 ¶¶ 120–21.

Dkt. No. 106 at 30.

(2) Analysis

The specification discloses:

The FET 252 will variably restrict current to the battery 116 to ensure that the electronic system has the requisite power source. As for the battery 116, it is supplied any additional available power (i.e. the leftover portion of the output power from the switch-mode battery charging circuitry 200). However, if V_{SYS} is not urged by the battery 116 to fall below the minimum voltage because V_{BAT} is sufficiently high, the FET 252 will be in full saturation if the battery 116 is being charged. The FET 252 can be turned off if the CH_EN signal, which is also fed to the CEnot pin of the IC 212 and the EN pin of the IC 220, is set to high, which *causes the FET 236 to saturate, thereby creating a positive output from the op-amp 248 which shuts the FET 252 off*. Thus, the charging and power supply circuit can include circuitry for turning the FET 252 off when charging is disabled.

'173 Patent at 6:32–46. Plaintiff's expert persuasively opines that because the FET 252 is the switch that is being shut off, the FET 252 is not part of the structure for shutting off. *See* Dkt. No. 102, Ex. 13, Dec. 5, 2017 Fernald Decl. at ¶ 224; *see also* *Teva*, 135 S. Ct. at 841.

Finally, although the above-reproduced disclosure refers to a "CH_EN signal," which Defendants argue is part of the corresponding structure,⁹ Defendants have not demonstrated that the signal itself is structural. Instead, the use of this signal can be understood by reference to the FET 236 and op amp 248 structures as disclosed in the written description.

The Court therefore hereby finds that **"switch means for shutting off said semiconductor switch if charging is disabled"** is a means-plus-function term, the claimed function is **"shutting off said semiconductor switch if charging is disabled,"** and the corresponding structure is **"FET 236 and op-amp 248; and equivalents thereof."**

VIII. CONCLUSION

The Court adopts the constructions set forth in this opinion for the disputed terms of the patents-in-suit.

⁹ Plaintiff, similarly, has proposed referring to a "gate voltage."

As set forth above, the Court finds that “the voltage sensing circuit” and “[the controller] is configured to control the switch in response to the voltage drop to provide sufficient power for operation of the device” lack antecedent basis and, as a result, the Court finds that Claims 7, 8, 10, 15–17, and 19 of the ’983 Patent are indefinite.

As also set forth above, the Court finds that “wherein the supply current passes through the external driving semiconductor rather than through the battery charge controller,” “whereby load current passes through the external driving semiconductor instead of the battery charge controller,” and “whereby load current passes through the external driving semiconductor in lieu of the controller” render Claim 2 of the ’319 Patent, Claim 2 of the ’514 Patent, and Claims 6 and 14 of the ’983 Patent indefinite.

The parties are ordered to not refer to each other’s claim construction positions in the presence of the jury. Likewise, in the presence of the jury, the parties are ordered to refrain from mentioning any portion of this opinion, other than the actual definitions adopted by the Court. The Court’s reasoning in this order binds the testimony of any witnesses, and any reference to the claim construction proceedings is limited to informing the jury of the definitions adopted by the Court.

Finally, as discussed above, Plaintiff’s Motion to Exclude Defendants’ Claim Construction Experts (Dkt. No. 83) is hereby **DENIED**. In addition, Plaintiff’s Motion to Expedite (Dkt. No. 85) is **DENIED AS MOOT**.

SIGNED this 31st day of January, 2018.


ROY S. PAYNE
UNITED STATES MAGISTRATE JUDGE